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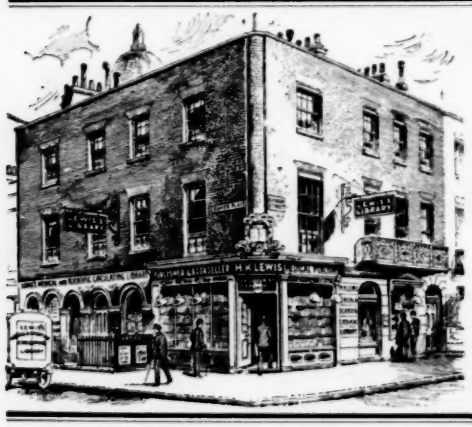

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PART III.*

RÉSUMÉ OF THE CONCLUSIONS REACHED IN THE FOREGOING INQUIRY.

WE have seen that epiphylactic response can be evoked in the blood by vaccines; that it can be evoked both in vitro and in vivo; that it is characterised by a sudden increase in the bactericidal and opsonic power of the serum, and that this increase is the result of a sudden evacuation of polytropic bactericidins and opsonins from the leucocyte. We have learned also something—but of course nothing like all—of the conditions under which epiphylactic response can be obtained. We have seen that when we vaccinate a normal blood in vitro with dead microbes and then test it with living, and also when we test a patient's blood which has been acted upon by antigens in vivo, the event will depend upon the total of antigen which has been brought into operation in the vaccinating procedure or auto-inoculation on the one hand, and the assaying procedure on the other.

With respect to the causative nexus between the application of excessive doses of vaccines and the development of apophylactic effects there is still a very serious lacuna in our knowledge. Seemingly the apophylactic effects produced by staphylococcus vaccine are different in origin and kind from those produced by typhoid and cholera vaccine. Whereas typhoid and cholera exert their apophylactic effect when brought into contact with serum, staphylococcus vaccine operates apophylactically only when brought in contact with the whole blood. This would seem to warrant the inference that when staphylococcus vaccine reduces the anti-bacterial power of the blood it does so not by adsorbing anti-bacterial elements from the serum, but by inciting the leucocytes to excrete into the serum some growth-favouring element.

Let me—asking you to remember that I cannot do any justice to the subject in the space now left to me—briefly indicate to you to what uses it may be possible to put the new information now in our possession. We can put it to account in the first place in the preparation of bacterial vaccines.

PRACTICAL APPLICATIONS.

Preparation and Control of the Efficacy and Dosage of Vaccines.

It will be clear that every point in connexion with the preparation of vaccines can be practically tested by the procedures that have been described above. For example, it will be possible to set on one side all those statistical inquiries which everyone proposes but nobody really carries out, and to ascertain directly whether one particular strain of microbes gives a better vaccine than another, whether one particular sterilising temperature is better than another, and whether it will be justifiable or unjustifiable to employ this or that particular vaccine in combating this or that infection. Further, we have here methods which will enable a comparison to be made between different kinds of vaccines. It will therefore henceforth be possible to call upon those who claim superiority for a particular brand of vaccine to show scientific justification for their claims. Lastly, it will be possible in the case of every vaccine to determine what is the dose which will give optimum response.

Here, however, we are launched upon a question which teems with difficulties and ambiguities. I will just indicate what they are and pass on. Consideration will show that when we speak of the optimum dose of a vaccine we really have in view a particular mode of administration and some approximate body weight (generally that of an average adult), and also a particular condition of the organism—the condition of being uninfected, or, as the case may be, lightly or heavily infected. Ordinarily, in speaking of the optimum dose, we have in view—and this is the particular point I wish here to consider—subcutaneous inoculation, this channel of administration being, upon the assumption that protective substances are formed in part at least by the tissues at the site of inoculation, regarded as the best. Doubts with regard to the trustworthiness of the premisses upon which this belief rests are suggested by two sets of facts recently brought to light. The first is that the implantation of sterile lint into the tissues gives precisely the same local yield of anti-bacterial substances as the implantation of lint impregnated with vaccines.[1] That points to the anti-bacterial substances coming not from the tissues but from some other element present in both cases, in other words, from the emigrated leucocytes; and to anti-bacterial substances being under these circumstances spontaneously set free from these. The second set of facts consist of those adduced above, which establish that bactericidal and opsonic substances are set free when vaccines in appropriate concentration come into operation upon leucocytes in the blood both in vivo and in vitro.

When these facts are regarded hypodermic inoculation stands out under a very different light. Its paramount advantage would appear to lie in the circumstance that the vaccine is under favourable circumstances fed slowly and continuously into the blood. But where a relatively large dose of vaccine is administered and carried into the blood too rapidly a formidable negative phase is bound to supervene. (It will be remembered that when the patient was not kept quiet after typhoid inoculation very severe negative phases used often to supervene.) And again, it will be clear that where a relatively small dose of vaccine is given and convection into the blood takes place very slowly, the quantum of antigen in the blood may never arrive at the concentration required for the production of epiphylactic response. These uncertainties—which would, of course, be exaggerated if the method of oral administration were followed—are avoided by the intravenous administration of a dose of vaccine standardised so as to give the optimum number of microbes per c.cm. of blood. With this system of dosage—which has here been followed throughout—there remain only the minor difficulties of estimating the patient's blood volume, and allowing for that progressive dissolution of microbes in the blood which might result in the bringing into application of more than the contemplated quantum of antigen. But these minor difficulties need not be too minutely insisted upon.

EXTENSION OF THE RANGE OF THERAPEUTIC INOCULATION.

We saw at the outset that ordinary vaccine-therapy had proved ineffective in chronic streptococcal septicæmias, in many of the acute septicæmic conditions of local origin, and in phthisis when associated with hectic temperatures. And it might have been added that vaccine-therapy has in pneumonia, in typhoid, and in other similar infections given either uncertain or negative results. For example, the inoculation of pneumococcus in native pneumonia

* The first and second parts of this lecture appeared in THE LANCET of Feb. 24th and March 3rd respectively.

[1] Wright: Lessons of the War, THE LANCET, March 29th, 1919, p. 496. The detailed experiments will be published subsequently.

patients in the hospitals of the Johannesburg mines[1] gave in our hands completely negative results. To the unsolved problems presented by this order of infections we must now return, asking ourselves whether we are still, as regards the actual treatment of the infection, compelled to make choice between a policy of non-intervention—disguised under the name of the expectant treatment—and a policy of purely empirical and ignorant intervention. The answer cannot be doubtful.

To begin with—and this in itself constitutes a definite advance—we can now by a "vaccine-response test" undertaken upon the blood in vitro decide whether a patient is or is not capable of making immunising response. Where he is competent to make such response we can further ascertain to what dose of vaccine, intravenously inoculated, he will be able to make optimum response. In the alternative of his not being able to make immunising response to a vaccine we can straight off—for such cases do not admit of delay—evoke epiphylactic response in a healthy human blood and resort to what I have called immuno-transfusion. In addition to these therapeutic suggestions, which apply, as will be seen, to cases where life and death may already hang in the balance, two other proposals of perhaps lesser import may be brought up for consideration. The first relates to inhibitory inoculation in the incubation period of all zymotic fevers of bacterial or non-bacterial origin; the second relates to the possibility of arresting, even after they have declared themselves, those minor but incapacitating infections grouped together under the heading of common colds. When we regard the fact that a non-specific epiphylactic response can be evoked instantaneously by the intravenous inoculation of appropriate doses of vaccine, it is not too venturesome to suggest that these desirable objects might possibly be achieved.

Only a small part of the domain which has here been rapidly reconnoitred has yet been explored, so it will perhaps be better to defer for a further communication any detailed account of successes achieved and disappointments experienced. But it will be indispensable to explain the method of going to work upon cases of septicæmia and acute infection, and to show how the methods of blood examination which have been described above are to be used in connexion with these cases.

Procedure to be Followed in Dealing with Cases of Septicæmia and Acute Infection.

For the scientific treatment of any grave infection there is required before all an equipment of principles. But that does not suffice. One requires in addition specific information with regard to the patient's condition. We require to know how he stands in the matter of the anti-bacterial power of his blood, and in the matter of its capacity for making immunising response to vaccines. And it is also essential to ascertain by direct means, with regard to each therapeutic intervention in its turn, whether it has been useful or ineffectual or hurtful. The laboratory methods described above can furnish us with this information. The first point to consider is how the anti-bacterial power of the patient's blood is to be gauged. Here the slide-cell inculturing procedure, and another technique which I shall have to describe to you, furnish the required data.

Slide-Cell Inculturing Procedure for Measurement of Hæmo-Bactericidal Power.

The following examples give an idea of what can be learned from the slide-cell procedure. It may be explained that in each case graduated dilutions of a broth culture of staphylococcus were implanted in to 50 or 100 c.cm. volumes of blood, and that the number of microbes implanted was enumerated by introducing similar quanta of suspension into serum and enumerating the colonies which developed in this after incubation in capillary tubes or slide-cells (vide supra, Figs. 2 and 3).

OBSERVATION 1.—*Patient suffering from Puerperal Streptococcal Septicæmia.*

Number of staphylococcal colonies which developed in—	Number of staphylococci implanted in volumes—							
	1	2	3	4	5	6	7	8
	1000	500	250	125	62	31	16	8
Patient's blood ..	182	88	43	27	BD	BD	BD	BD
Control blood	—	36	10	2	0	1	1	0

BD = Diffuse blue discoloration indicative of scattered bacterial growth.

OBSERVATION 2.—*Patient suffering from Coryza.*

Number of staphylococcal colonies which developed in—	Number of staphylococci implanted in volumes—							
	1	2	3	4	5	6	7	8
	1120	560	280	140	70	35	17	8
Patient's blood ..	48	31	31	4	4	1	0	0
Control blood	24	15	10	2	0	4	0	0

OBSERVATION 3.—*Patient suffering from Puerperal Septicæmia (M.M.).*

Number of staphylococcal colonies which developed in—	Number of staphylococci implanted in volumes—			
	1	2	3	4
	600	200	67	22
Patient's blood ..	51	22	7	4
Control blood	8	3	1	0

OBSERVATION 4.—*Patient suffering from Streptococcal Endocarditis.*

Number of staphylococcal colonies which developed in—	Number of staphylococci implanted in volumes—							
	1	2	3	4	5	6	7	8
	320	160	80	40	20	10	5	3
Patient's blood ..	30	7	3	2	2	2	2	2
Control blood	1	1	0	0	0	0	0	0

OBSERVATION 5.—*Patient suffering from Puerperal Streptococcic Septicæmia.*

Number of staphylococcal colonies which developed in—	Number of staphylococci implanted in volumes—							
	1	2	3	4	5	6	7	8
	2000	1000	496	248	124	52	26	13
Patient's blood ..	55	33	11	9	5	4	3	0
Control blood ..	11	3	0	3	1	0	0	0

Chiastic Procedure for Measurement of Phagocytic Power of Blood, Opsonic Power of Serum, and Phagocytic Efficiency of Leucocytes.

What the slide-cell method supplies is, as has already been appreciated, a measurement of the hæmo-bactericidal power obtained with different additions of living microbes. It does not tell us anything about the different factors upon which hæmo-bactericidal power depends, nor does it, where a blood has a diminished bactericidal power, disclose to us the nature and reason of the default. A good deal of what is here left untold is supplied by the *chiastic method*. The procedure consists in preparing defibrinated blood from the patient and a normal man; separating the serum from each of the bloods; preparing from each washed corpuscles; and then making by what has come to be called the opsonic technique a series of four phagocytic mixtures, constituted as follows:—

(1) One volume of the patient's serum, 1 volume of his washed corpuscles, and 1 volume of any suitable bacterial suspension.

[1] Wright: On Pharmako-therapy and Preventive Inoculation Applied to Pneumonia in the African Native (Constable, London, 1914), pp. 83–85.

(2) One volume of the normal serum, 1 volume of the washed normal corpuscles, and 1 volume of the same bacterial suspension.
(3) One volume of the patient's serum, 1 volume of the normal corpuscles, and 1 volume of the bacterial suspension; and
(4) One volume of the normal serum, 1 volume of the patient's corpuscles, and 1 volume of the bacterial suspension.

It is, of course, from the interchange and crossing of the corpuscles and sera in phagocytic mixtures 3 and 4 that the appellation *chiastic* is derived. The phagocytic mixtures having been incubated, spread out upon slides, and counted in the accepted manner, we now collate and marshal the results in the following fashion:—

(*a*) By dividing the phagocytic count (i.e., the average microbic intake) of preparation 1 by that of preparation 2 we obtain the *phagocytic index of the patient's blood.*

(*b*) By dividing the phagocytic count of preparation 3 by that of preparation 2 we obtain the *opsonic index of the patient's serum.*

(*c*) By dividing the phagocytic count of preparation 4 by that of preparation 2 we obtain the *phagocytic efficiency of the patient's leucocytes.*

A few examples will show clearly what we learn from this triad of phagocytic functions.

Example 1.—Surgical nurse with acute streptococcal infection originating from puncture in finger—temperature 105° F.

			P.C.
Patient's serum	+ patient's washed corpuscles	+ S.S. ..	0·57
Normal ,,	+ normal ,, ,,	+ ,, ..	3·9
Patient's ,,	+ ,, ,,	+ ,, ..	2·6
Normal ,,	+ patient's ,, ,,	+ ,, ..	1·36

S.S. = Streptococcus suspension. (Here, and in all the subsequent cases, a streptococcus vaccine diluted suitably supplied the suspension employed.) P.C. = Phagocytic count.

Phagocytic index of patient's blood, 0·15; opsonic index of patient's serum, 0·65; phagocytic efficiency of leucocytes, 0·34.

Example 2.—Child, aged 3 years, with acute streptococcal infection and abscesses in joints and subcutaneous tissues.

			P.C.
Patient's serum	+ patient's washed corpuscles	+ S.S. ..	0·2
A. E. W.'s ,,	+ A. E. W.'s ,, ,,	+ ,, ..	1·3
Patient's ,,	+ ,, ,,	+ ,, ..	1·75
A. E. W.'s ,,	+ patient's ,, ,,	+ ,, ..	0·18

Phagocytic index of patient's blood, 0·16; opsonic index of patient's serum, 1·3; phagocytic efficiency of leucocytes, 0·14.

Example 3.—Woman, aged 55 years, with streptococcal endocarditis.

			P.C.
Patient's serum	+ patient's washed corpuscles	+ S.S. ..	0·82
A. E. W.'s ,,	+ A. E. W.'s ,, ,,	+ ,, ..	4·05
Patient's ,,	+ ,, ,,	+ ,, ..	0·44
A. E. W.'s ,,	+ patient's ,, ,,	+ ,, ..	0·12

Phagocytic index of patient's blood, 0·2; opsonic index of patient's serum, 0·1; leucocytic efficiency, 0·03.

Results such as these can be registered in all acute septic infections. The premonitory signs of a grave infection would seem to be a reduction of the leucocytic efficiency, coupled with a rise in the opsonic index, and, as a result of some counterbalancing of the two factors just mentioned, a moderate fall in the phagocytic index. That type of result comes quite regularly under observation when we add to the blood in vitro excessive quanta of vaccine. We have already seen examples, and shall see others when we deal with the vaccine-response test. In the later graver stages of an infection the opsonic power is also reduced, and then the whole triad of phagocytic functions is prejudicially affected until they all, as in the last example, stand very little above the zero point.

It may here be pointed out, with regard to the leucocytic efficiency, that it appears to be reduced with regard to all microbes indiscriminately. Further, it may be noted that the leucocytes can recover from this heavily-poisoned condition. They can, as will later be seen in an example, recover in vivo when the blood fluids which bathe them are rendered more wholesome; and they can recover in vitro when transported into, and allowed to stand in, wholesome serum. What has been said above of the blood changes associated with acute sepsis may be completed by saying that the sero-bactericidal power is not even in grave infections sensibly reduced.

INVESTIGATION OF THE PATIENT'S POWER OF IMMUNISING RESPONSE.

When the anti-bacterial power of the blood has been investigated and been found wanting, the next thing to do is to find out whether the patient has any capacity of making immunising response, and with what vaccine and what dose he can make his optimum immunising response. This can be done by introducing graduated quanta of vaccine into a series of volumes of the patient's blood, and seeing whether there is any improvement in the hæmo-bactericidal or phagocytic power of the vaccinated bloods, or in the sero-bactericidal or opsonic power of their sera. The information being wanted almost immediately, and there being no time for culture, investigations of the bactericidal power are ruled out. We are therefore restricted to the measurement of the phagocytic power of the inoculated bloods and the opsonic power of their sera.

Let me show you in a series of examples what we can learn from phagocytic vaccine-response tests. I may with advantage consider, first, an example which comes from the bulletin of treatment of the child whose blood furnished a moment ago an illustration of the working of the chiastic procedure.

Blood of a child suffering from a generalised streptococcus infection and blood of a normal man who was about to furnish blood for immuno-transfusion into the child. March 7th, 1922, vaccine-response test conducted with defibrinated bloods.

—		Strepto-phagocytic indices.	
		Patient.	Proposed donor.
Blood unvaccinated		0·3	1·0
Blood vaccinated with	20 stc. per c.cm.	0·3	0·8
	40 ,, ,,	0·4	0·9
	80 ,, ,,	0·3	2·3
	160 ,, ,,	0·2	0·9

Stc. = streptococci.

Blood of a patient suffering from acute streptococcus infection with a mastoid suppuration and A. E. W.'s blood. Feb. 9th, 1922.

—		Strepto-phagocytic indices.	
		Patient.	A. E. W.
Blood unvaccinated		0·27	1·0
Blood vaccinated with	30 stc. per c.cm.	0·1	1·7
	60 ,, ,,	0·09	1·5
	90 ,, ,,	0·03	1·45
	600 ,, ,,	0·15	0·9

It is clear that when a patient's blood gives such results as these intravenous inoculations of vaccine are bound to do harm instead of good. These are cases for immuno-transfusion. The next example relates to the surgical nurse and to the self-same specimen of defibrinated blood which was employed for the first of the three chiastic tests cited above.

Patient with acute streptococcus infection spreading from a punctured wound and a temperature of 105° F.

The results recorded in the first column were obtained with phagocytic mixtures in which the sera and corpuscles of unvaccinated and vaccinated bloods were mixed with the streptococcus suspension; the results in the second column were obtained with phagocytic mixtures in which the sera of the unvaccinated and vaccinated bloods were employed in combination with the corpuscles of normal blood.

Vaccine-Response Tests.

—		Strepto-phagocytic counts.	
		Blood.	Serum.
Blood unvaccinated		1·81	1·5
Blood vaccinated with	20 stc. per c.cm.	1·9	2·0
	40 ,, ,,	1·6	4·7
	80 ,, ,,	1·4	1·7
	160 ,, ,,	3·2	2·7

These results show (and the contrary might have perhaps been expected from the event of the chiastic test)[3] that the patient's blood still possessed a con-

[3] Vide supra.

siderable capacity for immunising response, and that vaccination with 160 streptococci per c.cm. gave the best response. The patient was accordingly immediately inoculated intravenously with this dose of vaccine; in other words, with 700,000 streptococci.

Patient with chronic streptococcic septicæmia and endocarditis.

Vaccine Response Test.

—	Staphylo-opsonic index.
Blood unvaccinated	1·0
Blood vaccinated with 20 strep. per c.cm.	1·12
.. .. .. 50	1·18
.. .. .. 100	1·6
.. .. .. 200	1·4
.. .. .. 1000	2·35
.. .. .. 4000	1·26

This patient was obviously a suitable subject for intravenous inoculation with streptococcus vaccine.

VERIFICATION BY LABORATORY METHODS OF IMPROVEMENT OBTAINED IN GRAVE BACTERIAL INFECTIONS.

In grave bacterial infection only three kinds of therapeutic intervention appear to hold out any promise. (1) First among these would come—but the procedures in question apply only where there is localised infection—the evacuation of collections of infected pus, the effective draining of the tissues which encase a putrid wound, and the ablation of foci of infection. Such procedures, of course, put a quietus upon that continuous and immoderate auto-inoculation which poisons the leucocytes and interferes with immunising response. Where mechanical procedures for the reduction of the volume of infection are inapplicable our choice would appear to lie between (2) inoculations—by preference intravenous inoculations—of vaccine, and (3) immuno-transfusion. But our scientific task is not completed when we have applied the particular form of treatment selected. A priori inference is in medicine an untrustworthy guide. And when verification is in question, the guarantee furnished by quantitative laboratory methods—though this cannot perhaps vie with the psychological impression produced upon eye-witnesses by sudden and dramatic clinical improvement—is that which finally counts. In view of this I have set out below examples which show in connexion with each of the three aforementioned kinds of therapeutic intervention evidence of the benefit obtained from it. The examples have here been chosen to furnish illustration of points not previously brought out, and in particular to exhibit the increased anti-bacterial power obtained.

Example 1.—Showing the improved phagocytic and opsonic power and increased vaccine response and leucocytic efficiency obtained by evacuating an abscess.

Child with generalised streptococcus infection and an unopened abscess in the elbow joint who had been treated by two successive immuno-transfusions, each with 25 c.cm. of blood, on March 21st and 24th, 1922.

March 27th—*Chiastic Test:* Phagocytic index of blood, 0·07; opsonic index of serum, 0·8; phagocytic efficiency of leucocytes, 0·1. Abscess was now opened.

March 28th—*Chiastic Test:* Phagocytic index of blood, 1·02; opsonic index of serum, 1·4; phagocytic efficiency of leucocytes, 0·9.

Vaccine-Response Test.

	Strepto-phagocytic index.
Unvaccinated blood	1·0
Blood vaccinated with 20 strep. per c.cm.	1·3
.. .. .. 40	1·6
.. .. .. 80	1·0

To appreciate the improvement, the data of this vaccine response test should be compared with those registered with this child's blood before treatment was begun (vide foregoing section). The child's night temperature, which had for three weeks before the first immuno-transfusion ranged up to between 103° and 105°, and which had after the first immuno-transfusion come down to below 102°, and after the second to under 101° F., came down after the opening of the abscess to between 99° and 100° and soon after became normal.

Examples 2 and 3.—Showing increased phagocytic and opsonic power obtained by immuno-transfusion.

Patient with puerperal septicæmia. March 6th, 1922, immediately before immuno-transfusion, strepto-opsonic index 1·2, immediately after 2.

Example 3.—Patient with grave streptococcal infection and mastoid suppuration. Feb. 7th, immediately before immuno-transfusion, strepto-phagocytic index 0·3, immediately after 1·2. In this latter case the patient, who had three hours before the immuno-transfusion had a rigor with a temperature of 106° F., and was lying cyanotic and semi-comatose, revived at once after the immuno-transfusion, the colour improving, the mental condition becoming normal, the patient remarking that she felt wonderfully better, eating ravenously, and sleeping quietly at night without requiring any administration of oxygen.

The same patient, after two further high evening temperatures. Feb. 9th, 1922, 24 hours before the second immuno-transfusion, strepto-phagocytic index 0·27; on the 10th, immediately before the immuno-transfusion, 0·0. Transfusion of blood vaccinated in vitro with 100 streptococci per c.cm. On the 11th, one day after, 0·7; on the 12th, two days after, 1·1. On the 14th, four days after, 1·3; on the 15th, five days after, 1·4.

Vaccine-Response Test. (This result is to be compared with that recorded in the previous section.)—On the 12th, unvaccinated blood per c.cm., strepto-phagocytic index 1·1; blood vaccinated with 20 streptococci per c.cm., 1·0; with 40, 1·3; with 80, 1·0.

In connexion with this immuno-transfusion the clinical report says: "The result of the transfusion was again magnificent, the oxygen inhalation being discontinued, while the patient's colour improved, and she took nourishment well and passed a very good night." After very slight rises of temperature treated by an inoculation of streptococcus vaccine the patient made a rapid recovery.

Example 4.—Showing the increased hæmo-bactericidal power obtained in the case of donor by the intravenous inoculation of 160,000 streptococci, and in the recipient by the immuno-transfusion of 500 c.cm. of the donor's blood, drawn off and defibrinated half an hour after intravenous inoculation.

Patient suffering from necrosis of frontal bone and generalised infection originating in an operation on the nasal sinuses. The slide-cell inculturing procedure was employed, graduated doses of staphylococci being implanted into 50 c.mm. volumes of blood.

Donor's blood.				Patient's blood.			
Before inoculation.		Half-hour after inoculation.		Before immuno-transfusion.		24 hours after immuno-transfusion.	
Imp.	Surv.	Imp.	Surv.	Imp.	Surv.	Imp.	Surv.
206	11	496	10	264	42	164	3
121	6	145	1	137	20	115	1
48	0	72	0	67	6	50	0
23	1	32	0	49	5	23	0
9	0	17	0	22	3	10	0
10	0	9	0	13	0	0	0
1	0	4	0	3	2	2	0
0	0	0	0	2	0	2	0

Imp. = Implanted. Surv. = Survived.

Synopsis of Results.

1. Into the specimen of the donor's blood taken before inoculation in all 418 staphylococci were implanted, and 4·3 per cent. developed into colonies.

2. Into the sample of the donor's blood taken half an hour after inoculation in all 775 staphylococci were implanted and 1·3 per cent. developed into colonies.

3. Into the sample of the patient's blood taken immediately before immuno-transfusion in all 557 staphylococci were implanted and 14 per cent. developed into colonies.

4. In the sample of the patient's blood taken 24 hours after immuno-transfusion in all 366 staphylococci were implanted and 1·1 per cent. developed into colonies.

Comment.

In connexion with these and all other data furnished by the slide-cell inculturing procedure, it is perhaps advisable to return to a matter which has already been discussed, and to make clear the exact import of the figures. It must be kept in view that the assaying procedure employed is not an assaying procedure pure and simple, but also incidentally a supplementary vaccinating procedure. It follows that the improvement shown in the case of the donor

is really the resultant of two vaccinations—a vaccination in vivo and a superadded vaccination in vitro—and in the same way the improvement shown in the case of the patient is the resultant of an immuno-transfusion in vivo and a superadded vaccination in vitro. That being so, we are not entitled to claim for the intravenous inoculation and the immuno-transfusion that it did all that the figures in the tables might at first sight suggest. But we shall have made the proper abatement from that claim if we say this: The bloods of the donor and patient respectively have been so improved by our operations that they would, if they afterwards encountered an infection equivalent to an implantation of in the one case 10,000 (496×20) or less staphylococci per c.cm., and in the other case to 3200 (164×20) or less staphylococci per c.cm., have shown an improvement equivalent to those set out in the tables in connexion with these figures.

Example 5.—Showing increased sero-bactericidal power obtained by immuno-transfusion of 500 c.cm. of defibrinated blood obtained from a donor who had four hours before been inoculated intravenously with 150,000 streptococci.

Patient suffering from a chronic hectic temperature supervening upon a staphylococcal infection of both breasts which had led to their amputation.

Serum of blood drawn off	Number of staphylococcus colonies which developed in 50 c.mm. volumes of serum.
immediately before immuno-transfusion	36
5 minutes after immuno-transfusion	28
1 hour after immuno-transfusion	24

This is equivalent to an increased killing power of 240 staphylococci per c.cm. Consideration will show that this method of assay excludes the possibility of any supplementary epiphylactic response in vitro.

Example 6.—Showing increased sero-bactericidal power to staphylococcus obtained by the immuno-transfusion of 500 c.cm. of blood vaccinated in vitro with 30 streptococci per c.cm.

Patient with a chronic pyrexia following on a series of local streptococcal infections.

	Number of staphylococcus colonies which developed in 20 c.mm. volumes of serum.	
Serum from blood drawn 24 hours before immuno-transfusion	36, 31	33½
Serum from blood drawn immediately before	44, 36	40
Serum from blood drawn 5 minutes after transfusion	24, 28	26
Serum from blood drawn 24 hours after transfusion	24, 20	22

Calculation shows that here the serum after immuno-transfusion killed 700 more and the serum 24 hours after 900 more staphylococci per c.cm. than before.

Example 7.—Demonstration by the implanting and explanting method of increased hæmo-bactericidal power obtained by immuno-transfusion of 500 c.cm. of blood from a donor who had half an hour before been inoculated intravenously with 170,000 streptococci.

Patient with puerperal streptococcic septicæmia.

Number of staphylococci implanted per 5 c.mm. of blood.	Number of colonies which developed on agar when 5 c.mm. of blood drawn before immuno-transfusion was explanted.		Number of colonies which developed on agar when 5 c.mm. of blood drawn immediately after immuno-transfusion was explanted.	
	Immediately.	After ½ hour.	Immediately.	After ½ hour.
55	32	94	38	48
29	10	53	15	11
10	6	16	10	7
7	5	6	8	1
4½	3	2	5	2
105	56	171	76	69

We have here the results of two separate assays. When assayed by implanting and explanting immediately (the comparison is here between columns 1, 2, and 4), the blood drawn off immediately after immuno-transfusion showed a decline rather than an improvement. When assayed by implanting and explanting after half an hour (the comparison is here between columns 1, 3, and 5), the blood drawn off immediately after immuno-transfusion shows great improvement. While in the blood drawn off before immuno-transfusion 105 microbes had increased to 171, and in the blood, drawn off after, the 105 had decreased to 76.

I may just advert to one further point of theoretical interest in connexion with immuno-transfusion. This is that when the donor, or his blood, has been inoculated with too large a quantum of vaccine, or where insufficient time has intervened between inoculation and transfusion, instead of a positive, a negative phase, such as that which would have been produced by a direct inoculation of vaccine, will supervene.

I may now pass from the illustration of the effects of immuno-transfusion to illustrate those of the direct inoculation of vaccines into patients whose blood has after examination by the chiastic or vaccine-response test, or on general clinical grounds, been adjudged to be capable of making immunising response. It will—for we are here dealing with blood conditions which are, of course, fundamentally the same as those obtaining in health—suffice here to adduce a couple of examples.

Example 8.—Increased hæmo-bactericidal and sero-bactericidal power obtained by the intravenous inoculation of 700,000 dead streptococci (160 per c.cm. of patient's blood).

Surgical nurse suffering from an acute streptococcus infection originating in a punctured wound of the finger. Temperature 105° F. Measurement of hæmo-bactericidal power by implanting staphylococcus by the wash and after-wash procedure into a sequence of 10 c.mm. volumes of blood in a long capillary tube.

—	Number of colonies which developed in volumes—					Total in—	
	1	2	3	4	5	40 c.mm.	1 c.cm.
10 P.M.: Blood immediately before the intravenous inoculation	+	6	5	2	2	21·5	540
	+	16	8	4	0		
Blood 3 mins. after the inoculation	+	6	0	0	0	7	175
	+	6	2	0	0		

The sign + indicates that the colonies were too numerous for accurate enumeration.

Sero-Bactericidal Power (same technique).

—	Number of colonies which developed in volumes—					Total in—	
	1	2	3	4	5	40 c.mm.	1 c.cm.
3 P.M.: Serum from blood drawn 7 hours before intravenous inoculation	+	20	12	5	1	37	1000
	+	17	14	3	1		
	+	19	12	5	2		
10 P.M.: Serum from blood drawn immediately after inoculation	+	12	9	0	0	22·5	550
	+	17	4	3	0		
12.30 A.M.: Serum from blood drawn 2½ hours after inoculation	+	10	5	2	0	14·5	360
	+	9	2	1	0		

The patient's temperature by next morning had come down from 105° to 99°, and she was quite out of danger. The finger afterwards began to suppurate and was incised, and the patient made a rapid recovery.

Example 9.—Increased hæmo-bactericidal power obtained by intravenous inoculation of 30,000 streptococci.

Patient suffering from streptococcal septicæmia and endocarditis. Slide-cell inculturing method.

Number of staphylococci implanted.	Number of colonies which developed in blood drawn off—	
	Before intravenous inoculation.	20 mins. after intravenous inoculation.
160	31	12
80	16	9
40	7	7
20	3	3
10	4	0
5	0	0
315	61	31

Example 10.—Increased sero-bactericidal power obtained by intravenous inoculation of 125,000 dead staphylococci (50 per c.cm. of patient's blood).

Patient with streptococcal endocarditis (M.F.). June 19th, 1922, sera from bloods drawn off before and at intervals after inoculation. Measurement of sero-bactericidal power by implantation of 2·5 c.mm. of staphylococcus suspension into 50 c.mm. samples of serum.

	Average of samples tested.	Colonies.
Serum before inoculation	6	67·5
,, ½ hour after inoculation ..	3	41·5
,, 2 hours ,, ,, ..	3	49·5

Calculation shows that here the serum half an hour after inoculation killed 520 more, and two hours after inoculation 360 more staphylococci than before.

Example 11.—Increased sero-bactericidal power obtained by intravenous inoculation of 130,000 dead streptococci (55 per c.cm. of patient's blood).

Same patient (Example 10) with streptococcal endocarditis (M.F.). Procedure as before (Example 10).

Two volumes of serum *immediately before inoculation* furnished 82 and 91 colonies, average 86·5.

Two volumes of serum *half an hour after inoculation* furnished 82 and 99 colonies, average 90·5.

Two volumes of serum *two hours after inoculation* furnished 78 and 88 colonies, average 83.

One volume of serum *four hours after inoculation* furnished 32 colonies.

Calculation shows that the serum four hours after inoculation killed 1090 more staphylococci per c.cm. than before.

Example 12.—Increased hæmo-bactericidal power to staphylococcus obtained by the inoculation of 200,000 typhoid bacilli 80 per c.cm. of patient's blood).

The same patient (Examples 10 and 11) with streptococcal septicæmia and endocarditis (M.F.). Measurement of hæmo-bactericidal power by implantation of 2·5 c.mm. of progressive dilutions of staphylococcus culture into 50 c.mm. samples of blood and inculturing these in slide cells.

—	Number of colonies of staphylococcus which developed in volumes—								
	1	2	3	4	5	6	7	8	Total.
Blood drawn immediately before inoculation	32	16	9	4	5	1	0	0	67
Blood after inoculation..	23	7	3	1	0	1	1	1	37

The number of staphylococci implanted was the same for the two bloods.

Example 13.—Increased hæmo-bactericidal power obtained by the intravenous inoculation of 40,000,000 staphylococci (8000 per c.cm. of patient's blood).

Patient with chronic hectic temperature following upon staphylococcal infection of the breasts (M.F.). Procedure as above (Example 12).

—	Number of colonies of staphylococci which developed in volumes—								
	1	2	3	4	5	6	7	8	Total.
Blood drawn immediately before inoculation	31	13	7	3	2	0	1	1	58
Blood one hour after inoculation	6	2	1	1	0	0	0	0	10

The number of staphylococci implanted was the same for the two bloods.

CONCLUSION.

I have now finished with the setting out of the data of individual experiments, and would, in conclusion, set out two considerations of a more general order. The first has reference to the question of the therapeutic prospects here opened up. The experiments which have been set out have brought into prominence the fact that in immunisation quantitative considerations dominate the situation. When we want to evoke immunising response in the blood we must employ one particular range of doses. And when we want to ascertain what has been achieved we must again employ one particular range of doses. Once that principle has been accepted, and we realise that in each case only a definite measure of additional anti-bacterial power is engendered, and that with it only such and such an additional number of microbes can be killed, it becomes possible to get down to figures.

In the experiments incorporated in this paper the increased anti-bacterial power engendered runs, as calculation shows, generally into the killing of several additional hundreds or exceptionally several additional thousands of staphylococci per c.cm. It never gives us an additional killing of tens or hundreds of thousands. These figures, then, give us our upper and lower limits. Within that range there is, as reflection will show, much useful therapeutic work to be accomplished. But we must not close our eyes to the fact that, just as there is an assaying dose of living microbes which no immunised blood can contend against, so there must be a very definite limit to the volume of infection which intravenous inoculation of vaccines, or immuno-transfusion can cope with. And in computing that volume of infection we must take into reckoning not only the microbes actually circulating in the blood (those even in very severe cases of streptococcal septicæmia do not amount to more than a very few hundreds of microbes per c.cm.), but the total bacterial population in the internal organs, which may run into indefinite millions.

The second point—which comes in appropriately at the end of this paper, which began by showing how always a new code of principles comes and supersedes or modifies its predecessor—is that it behoves us to realise that in every code of principles there are tenets based only upon inference as well as tenets based upon direct experiment. But while we regard that, we should also keep before us that in every succeeding code those elements which rest on inference grow less and less, and those which rest directly upon fact—those which are established by laboratory methods—grow more and more. So that in the end, in every science, enduring principles will be reached.

In conclusion, I would express to the Medical Research Council grateful acknowledgments for those external circumstances which allow of the undertaking of protracted and undisturbed researches, and for the valuable aid of Dr. Leonard Colebrook.

ARTIFICIAL PNEUMOTHORAX:

ITS APPLICATION TO CASES OTHER THAN THOSE OF PULMONARY TUBERCULOSIS.

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THE cases described in this paper illustrate the application of artificial pneumothorax to conditions of thoracic disease other than pulmonary tuberculosis. They form a consecutive series of 21 cases taken as admitted to our wards and show the results of the treatment whether successful or not. Two cases only have been omitted, both of bronchiectasis, in which artificial pneumothorax was tried, but was found to be impossible owing to the presence of widespread adhesions. The series includes seven cases of abscess of lung, six of bronchiectasis, three of recurrent profuse hæmoptysis, two of chronic pleural effusion, and three of effusion complicating growth. It is not suggested that none of these cases were tuberculous, though the great majority certainly were not. The three cases of recurrent hæmoptysis and the two of chronic effusion may possibly have originated in tuberculosis, but as no tubercle bacilli were ever found they are not claimed here as such, and treatment was undertaken for relief of the immediate condition.

Abscess of Lung.

The following cases were of abscess of the lung:—

CASE 1.—Female aged 34. Cough began in August, 1919, after confinement; there was sputum, which increased

in quantity and became offensive. Hæmoptysis (6 oz.) in June and again in August, 1920, at which time the daily quantity of sputum was 4 oz. and the weight 120 lb. There were signs of excavation at the base of the left lung. Artificial pneumothorax was induced on Sept. 30th. In March, 1921, her weight was 146 lb. and there was about an ounce of sputum daily, but it was not then offensive. In November her weight was 173 lb. and there was no sputum. Treatment was then stopped and she has remained well and free from symptoms.

CASE 2.—Female aged 26. An abscess developed in the base of the right lung after confinement in August, 1920. In June, 1921, she had 7 oz. of sputum daily, and her weight was 106 lb. Artificial pneumothorax was induced, and she gradually improved, but the symptoms recurred whenever the lung was allowed to re-expand. In August, 1922, treatment was stopped and the lung has been re-expanding since without any return of the symptoms. Her weight is now 124 lb. and she has had no sputum since April, 1922.

CASE 3.—Male aged 30. Pneumonia in January, 1920. Cough and much sputum since. Condition gradually became worse in spite of vaccine and other treatment. In July he was toxic, had evening temperatures of 102° F. and much offensive sputum. There were signs of an abscess at the base of the right lung. Artificial pneumothorax was then induced, and the lung kept collapsed until December, 1920, when it was allowed to re-expand. He had then lost all sputum and improved in his general health. The symptoms have not recurred and he remains well.

CASE 4.—Male aged 40. An abscess at the base of the right lung followed an operation for nasal polypi in May, 1921. In October he had a large amount of very offensive sputum. His temperature ranged between 101° and 102·6° F.; he was toxic and acutely ill. Pneumothorax was induced, but four days later the abscess broke into the pneumothorax cavity. A large amount of fœtid pus was aspirated, and the pleural cavity was washed out every day until clear. Ten days later he was very much better; the pleural cavity was then drained and he made an uninterrupted and complete recovery.

CASE 5.—Male aged 50. Left pleurisy in January, 1921, followed by cough, offensive sputum, and two attacks of hæmoptysis. Signs of abscess of lung found in left axilla. In July, 1921, a pneumothorax was induced, and he improved quickly, leaving hospital in October. A few days later, whilst running for an omnibus, he felt a sharp pain, and the abscess ruptured into the pneumothorax cavity. Pus was aspirated, and the pleural cavity washed out until clear and later drained. He made a good recovery and is now free from all symptoms.

CASE 6.—Male aged 42. An abscess developed in the base of the right lung after appendicectomy in December, 1921. In February, 1922, there were 10 oz. of offensive sputum daily, and the patient was very ill. Pneumothorax was induced, the general condition improved, and the amount of sputum was slightly reduced, but it remained offensive. X ray showed a large patch of adherent pleura at the back, preventing full collapse of the lung. In June a partial thoracoplasty was performed by Mr. W. H. C. Romanis, portions of three ribs being removed from the right base. The immediate improvement in the patient was remarkable. He lost all cough and sputum, and his general condition became normal in a few weeks. There is only a small scar and no deformity. He has gained a stone in weight.

In this case a small amount of fluid formed in the pneumothorax cavity during treatment, but it was a very small amount and soon disappeared. It is remarkable as being the only one of our non-tuberculous cases in which an effusion formed.

CASE 7.—Male aged 36. A right-sided artificial pneumothorax was induced for abscess of lung. The sputum was reduced from 7 to 2 oz. a day, but remained at that. X ray showed a large adhesion at the back preventing full collapse of lung. An operation was performed and the adhesion divided, but the patient died the next day.

Bronchiectasis.

The following were cases of bronchiectasis:—

CASE 8.—Female aged 23. Bronchiectasis of lower lobe of right lung following pneumonia in 1915. Pneumothorax induced at the end of 1918, with immediate improvement, the sputum disappearing. When the lung was allowed to re-expand the symptoms returned; the lung was therefore kept collapsed until after two years, when the pneumothorax cavity was beginning to close owing to contraction of adherent pleura. The treatment was stopped in March, 1921. She has now no sputum and has remained quite well, except for a little dry cough.

CASE 9.—Female aged 22. Cough and sputum since an operation for removal of the tonsils and adenoids in 1910. Worse since influenza in 1919. Had had several attacks of hæmoptysis, and was coughing up about 3 oz. of very offensive sputum daily in July, 1921. Signs of bronchiectasis at left base, and to a very slight extent at right base. Left lung collapsed in July, 1921; sputum promptly reduced to about an ounce a day, but remained offensive. In January, 1922, the lung was allowed to re-expand and the amount of sputum did not increase. In February the right lung was collapsed, but as no further reduction in the quantity of sputum occurred, it was allowed to re-expand at the end of March. Patient's weight constant throughout the treatment, and her condition is much the same as before pneumothorax was induced, except that she has less sputum.

CASE 10.—Male aged 15. Cough with increasing quantity of sputum since influenza in July, 1920. In April, 1922, he had 15 oz. of offensive sputum a day, was toxic, wasted, and had signs of excavation at base of right lung. Pneumothorax induced on April 22nd; by May 12th general condition very much improved, and daily amount of sputum reduced to 3 oz. Still under treatment, amount of sputum varying from ½ oz. to 3 oz. a day.

CASE 11.—Male aged 36. Cough has continued since influenza in 1920. Clubbing of fingers developed with dyspnœa, and about 4 oz. of offensive sputum a day, and signs of bronchiectasis at the left base. A left pneumothorax induced in January, 1921, and is still being kept up. Sputum now about 2 oz. a day and no longer offensive. When the lung is allowed to re-expand the amount of sputum increases. General condition improved.

CASE 12.—Male aged 41. Cough since left pleurisy in August, 1917. In October, 1920, toxic, had evening temperatures of 100° F., from 6 to 10 oz. of offensive sputum daily, and had been confined to bed for two months. Signs of bronchiectasis at left base. Pneumothorax was induced and he immediately improved. By March, 1921, he had gained 10 lb. in weight and had very little sputum. The collapse, however, was not complete, for there were several separate adhesions as well as some adherent pleura, by the contraction of which the lung was gradually drawn out, the pneumothorax cavity becoming smaller and smaller. He kept well, however, until December, when the symptoms began to return. In June, 1922, he was again coughing up about 7 oz. of sputum daily and thoracoplasty was performed. His symptoms improved, and he seemed to be doing extremely well, but developed pneumonia and died some three weeks after the operation.

CASE 13.—Female aged 33. A right artificial pneumothorax induced for long-standing bronchiectasis. Eight months later the amount of sputum much less, the general condition improved, and she had gained over a stone in weight. Owing to adhesions, however, only partial collapse was possible and thoracoplasty was performed. The wound became infected and she died of sepsis.

In two other cases, as we have mentioned, artificial pneumothorax was attempted but found to be impossible owing to pleural adhesions.

Hæmoptysis of Unknown Origin.

The following cases were of hæmoptysis, of which the origin was unknown.

CASE 14.—Male aged 28. Hæmoptysis of 4 oz. in 1906. Similar attacks about once a year until 1918, since when they have become more frequent. Three hæmoptyses in May, 1920, and afterwards about one a month—the largest 10 oz. A few râles and dullness at right base. A right artificial pneumothorax induced during an attack of hæmoptysis in March, 1921; lung kept collapsed until July, 1922, since when it has been allowed to re-expand. No hæmoptysis since March, 1921.

CASE 15.—Female aged 27. In November, 1919, patient coughed up half a pint of blood. No tubercle bacilli found in sputum, and she kept well until August, 1920, when she had another large hæmoptysis. After this there were other attacks, the last being in September, 1921, when she had hæmoptysis—a quart. On examination, signs of infiltration at left apex and in axilla; X rays showed a dense opacity at left apex. Pneumothorax induced in November, 1921; since then no further hæmoptysis. No cough or sputum; patient is keeping fit and has returned to work. The pneumothorax is being kept up.

CASE 16.—Female aged 32. Hæmoptysis in 1914; since then has had an attack, about a cupful, every two or three months. Her general condition remained good. In June, 1920, an area of dullness and bronchial breathing were found at the right base and X ray examination showed a dense opacity in this region. A right pneumothorax was induced and the lung well collapsed. In spite of this she had another attack of hæmoptysis in September, and again in January, 1921, after which the treatment was stopped. Her general condition has kept good, but she still has periodical attacks of hæmoptysis.

Chronic Pleural Effusion.

The following cases were of chronic pleural effusion.

CASE 17.—Male aged 44. Left pleural effusion in January, 1920. It had been aspirated four times, but the fluid quickly reaccumulated, and in August, 1920, the left pleural cavity was full. The fluid was then removed and replaced with oxygen. This was repeated in September and October, 1920. After this the fluid did not re-form, and the lung very quickly re-expanded. He has since kept fit and at work.

CASE 18.—Female aged 30. Right pleural effusion following pneumonia in 1919. This had been aspirated five times by March, 1920, when there was a large right pleural effusion; 1800 c.cm. were removed and replaced with 1200 c.cm. of oxygen. The liquid contained cholesterin crystals, but was sterile, and no tubercle bacilli were found. In April 1100 c.cm. of liquid were removed and replaced with 800 c.cm. of oxygen. In May X ray showed the lung re-expanding and only a small amount of liquid in the pleural cavity. In July, 1920, there was no effusion and the lung had re-expanded. In the remaining three cases (19, 20, and 21) growth of mediastinum or pleura was present, and replacement failed to prevent the reaccumulation of the pleural effusion.

Conclusions.

It will be seen from these cases that artificial pneumothorax may be of value in abscess of lung, bronchiectasis, hæmoptysis of unknown origin, and recurrent pleural effusion. In abscess of lung the success of artificial pneumothorax evidently depends on the presence or absence of adhesions. Where these are absent artificial pneumothorax is sufficient to effect a cure and render a severer operation unnecessary. Considering the uncertainty of discovering the abscess cavity it is certainly to be preferred to drainage. When the abscess is superficial the presence of adhesions may lead under pneumothorax to its intrapleural rupture (Cases 4 and 5) necessitating drainage of the pleura. If the adhesions are widespread they may stand in the way of complete collapse (Case 6) and prevent success, necessitating thoracoplasty. But even so, we advocate artificial pneumothorax as routine procedure on the ground that it may be sufficient in itself and, where not, that the symptoms are relieved and the general condition of the patient improved, enabling him better to face the severer operation.

Success in bronchiectasis, as in abscess of the lung, depends on adhesions which in Cases 12 and 13 led to disappointing results, and in two cases rendered the induction of pneumothorax impossible. Case 8, however, shows that artificial pneumothorax may be completely successful when prolonged (two years), and the failure in Case 9 we may attribute to insufficient length of treatment. This view is upheld by Cases 10 and 11 in which the treatment is still being continued with results already beneficial and hopeful. In the cases of recurrent hæmoptysis and chronic effusion success was striking.

A FATAL CASE OF PRE-RENAL TOXÆMIA

SHOWING CLINICAL SIGNS OF CHRONIC PARENCHYMATOUS NEPHRITIS.[1]

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THIS case is of interest from the point of view of the relationship between the symptoms and signs of "parenchymatous nephritis," and the condition actually found in the kidney, both during the disease and post mortem. The effect of decapsulation and other remedies is also discussed.

History.—On Jan. 28th, 1922, a man, aged 42, was admitted to hospital complaining of swelling of his legs for seven weeks, and of his "stomach" and back for six weeks. Additional symptoms were very troublesome—viz., flatulence, shortness of breath on exertion, and occasional headaches. The only serious illness from which he had suffered was a febrile attack ("influenza") in Egypt in 1918. There was no venereal history.

Condition on Examination.—Great pallor and marked œdema of legs, abdomen, and back, and also ascites. Cardio-vascular system showed no abnormalities, though the heart sounds were very faintly heard. Systolic blood pressure, 132 mm. Respiratory system: evidence of some pleural effusion at both bases, especially the right. Tongue was furred, tonsils rather injected, and gums showed pyorrhœa. Abdomen was distended by fluid, and also by meteorism, especially in upper part. Patient complained of a dull pain all over abdomen, and great flatulence after meals. Urine: About 200 c.cm. passed in 24 hours, sp. gr. 1030, brown colour, acid, containing about 2 per cent. of albumin; microscopic examination showed red blood-cells and numerous granular, hyaline, and epithelial casts; the urea-concentration by MacLean's test was nearly normal, averaging 1·7 per cent. Blood-urea was within normal limits (33 mg. per 100 c.cm.). Wassermann reaction negative. Fundi, examined ten days after admission, normal.

Treatment.—At first consisted of rest in bed, salt-free diet, and a diuretic mixture containing potass. acetat., tr. scillæ, sp. æther. nit., and succ. scoparii. In four days quantity of urine passed in 24 hours rose to 660 c.cm. On sixth day hot-air baths once daily were used, but no satisfactory perspiration was produced. Bowels were very obstinate, and large doses of jalap, given with hot water, were required to achieve any result. From tenth day urea (1 dr.) was given four times a day for a few days, with no effect on diuresis, and then diuretin (gr. 20), t.d.s., with no result; the urine continued to average about 500 c.cm. daily. Patient was drinking fairly freely, but little fluid was excreted, either by skin or by bowels. The flatulence was very troublesome, and had to be relieved by hot applications and carminatives. No progress being made by medicinal and dietetic means, and the history being comparatively short, it was decided to try decapsulation of a kidney.

First Operation.—Three weeks after admission his right kidney was decapsulated by Mr. Gwynne Williams, one kidney only (the right) was operated on to begin with, in order to watch the result. The kidney was of normal size and colour; a slit was made in the capsule (which was not tense), and a small piece of kidney substance removed for examination; the capsule was then separated from the kidney all round. The peritoneal cavity was opened and two to three pints of ascitic fluid allowed to escape; this was milky and opalescent from the presence of lecithin-globulin (Dr. Mackenzie Wallis). Intestines pale, but no visible peritonitis.

Course of Condition.—Four days later the urine had risen to 900 c.cm., and the œdema was rather less; ten days after the operation it rose suddenly to 1200 c.cm. (albumin 0·36 per cent.), but within four days it dropped again as quickly to 600 c.cm. Urea was now again tried and pushed in doses of 15 g. t.d.s., except when the patient was sick; the urine now increased within 18 days to 1600 c.cm. in 24 hours and then averaged 1200 c.cm. for about 12 days. The general condition of the patient was, however, but little altered and the œdema not materially diminished. The abdomen and scrotum were again tense.

Second Operation.—With the idea that the increased urinary output might have been due partly to the operation, it was decided to decapsulate the left kidney. Accordingly, on April 5th, 1922, seven weeks after the first operation, a second operation was performed by Mr. Gwynne Williams. The left kidney and its capsule were normal in appearance and in size; the capsule (which was not tense) was slit and retracted; the peritoneal cavity was opened and

[1] Read at the combined meeting of the Sections of Medicine and Ophthalmology of the Royal Society of Medicine on Dec. 8th, 1922.

several pints of milky fluid like that at the first operation were removed. The intestines were pale but otherwise normal. For the next two days the quantity of urine dropped to 700 c.cm., albumin still being present. On the third day the urine rose again to 1350 c.cm., but after that it steadily decreased in amount and the œdema re-accumulated. Three weeks after the operation an attempt was made to reduce the œdema by giving him less to drink (only about 1½ pints daily), salt-free diet, purgatives, and theocin sod. acet. gr. 4, tr. digitalis ℥ 7½, and sod. sulph. gr. 15 t.d.s.; the increasing oliguria could not be stayed.

Fatal Termination.—On April 27th the blood-urea had risen to 48 mg. in 100 c.cm. Abdomen was now very distended again and vomiting started. On May 9th, everything else having failed to relieve the œdema, Southey's tubes were inserted into his feet with scrupulous aseptic precautions. A very large quantity of fluid was drained off (four pints on the first day). The abdominal distension, which was partly gaseous, was not relieved. The chlorides in the urine were markedly diminished. After a few days the feet became red and painful; the temperature dropped to 96°; the blood pressure, 132 mm. Hg on admission, soon falling to 120 mm., where it remained, now fell to 90 mm., and the patient became drowsy and sometimes semi-comatose. On May 30th his blood-urea had risen to 63 mg. in 100 c.cm. The albumin in his urine on June 1st was 0·5 per cent., on the 2nd 1·25 per cent., and on the 3rd 2·5 per cent. He was now somnolent, often sick, and there was evidence of cellulitis in the legs. On June 5th he died.

Autopsy.—Externally a few petechiæ were seen on the arms. Incisions into the dorsa of the feet showed the cellular tissue to be distended with pus. Heart small, only 5½ oz. in weight, and atrophic; a few patches of atheroma seen in aorta and coronary arteries; heart muscle dark brown. Lungs, &c.: Each pleural sac contained about 6 oz. clear fluid; scattered fibrous adhesions on both sides; lungs congested and œdematous. Peritoneum: A large quantity of turbid ascitic fluid; considerable flakes of fibrinous exudate found on peritoneal surface. Intestines: Sigmoid colon contracted, apparently by thickening of bowel walls; mucous membrane showed slaty grey patches, and was œdematous and congested; no ulceration or evident scarring; affected area sharply marked off from the contiguous normal gut. Kidneys: Left kidney, normal in size, removed and injected with preservative fluid soon after death; right kidney, of normal size and weighing 5 oz., not injected with preservative fluid; surface smooth and rather pale; cortex, medulla, and vessels normal.

Microscopic Sections of Kidneys.—Mr. T. W. P. Lawrence described the sections as follows:—

1. *Section of right kidney, piece removed at first decapsulation operation.*—(*a*) Localised cloudy swelling and necrosis of tubules, probably acute; adjacent areas quite normal. (*b*) Some slight chronic changes shown by thickening of capsules. (*c*) Proliferation of epithelium of glomerular tufts. (*d*) Slight increase of interstitial tissue between tubules in places. (*e*) Small localised effusions of red corpuscles.

2. *Section of right kidney, piece removed post mortem, the organ not having been injected with preservative fluid.*—(*a*) All acute changes above described absent. (*b*) chronic changes shown by thickening of capsule, only slight, as above. (*c*) Numbers of nuclei in glomerular tufts fairly normal. Corpuscles not so large as in above section. (*d*) Slight interstitial changes between tubules, as in above section. (*e*) No effusion of red corpuscles. (Considerable autolytic change in tubular epithelium.)

3. *Section of left kidney, piece removed post mortem, the organ having been injected with preservative fluid very soon after death.*—Microscopic details of this kidney identical with those met with in right kidney, no acute cloudy swelling or necroses being visible in tubular epithelium. Autolytic changes minimal.

Summary.—"The sections of the piece of kidney removed during life show slight but definite changes such as could be produced by some toxic agent arriving by the blood-stream. The sections of the pieces removed after death only show the slight chronic changes met with in the sections of the piece removed during life and are very little different in appearance from those of a normal kidney."

Remarks.

This man died from an illness the symptoms of which were typically those which have been attributed to "chronic parenchymatous nephritis"; but his kidneys were found at the post-mortem examination to be normal macroscopically, and practically normal microscopically. His actual death was, perhaps, due to or hastened by the infection which followed insertion of Southey's tubes, but before the latter were reluctantly resorted to he was steadily progressing to the inevitable end. The section from the piece of right kidney taken during life at the first decapsulation operation showed some parenchymatous changes of an apparently acute nature. As the right kidney showed none of these appearances post mortem, decapsulation may have restored the kidney, but did not improve the pre-renal toxæmia.

I am forced to the conclusion (unless in such cases one thrusts aside as valueless *all* microscopical evidence of the presence or absence of disease) that this long, insidious, and fatal illness was not accounted for primarily by the state of the kidneys. The heart was very small and in a condition of brown atrophy—always looked upon as a secondary phenomenon, not as a primary morbus cordis "sui generis"—but the heart actually showed considerably more evidence of disease than the kidneys. Even supposing the kidneys *had* shown parenchymatous changes post mortem, there would be no more reason for considering the kidney degeneration primary than that of the heart. Incidentally, there were no signs of renal inefficiency during the earlier and greater part of the illness, except oliguria (which occurs in heart disease), albuminuria (which occurs in 6 per cent. of healthy adults), and diminished excretion of chlorides (which occurs also in fevers, especially pneumonia, and is not incontestably the result of damaged kidneys). Furthermore, the œdema is not easy to explain as due entirely to the retention of chlorides, since œdema is not a feature of pneumonia, and does not even occur in obstructive suppression of urine or after removal of the only kidney. It is of great importance to note that, although towards the end of his illness the kidneys were only slightly, or possibly not at all, damaged, the blood-urea rose, so that an abnormally large amount of urea may be present in the blood with slight or no changes in the kidneys. It would, therefore, seem as if this man's illness were due to some pre-renal poison which caused exudation into the tissues, and incidentally damaged some of the tubules of the right kidney; but the latter had recovered by the time the man died.

I wish to thank Dr. Batty Shaw and Mr. Gwynne Williams for the use of their case reports, and Mr. T. W. P. Lawrence for his description of the microscopical sections.

THE SOFIE A. NORDHOFF-JUNG CANCER RESEARCH PRIZE.—Dr. Sofie A. Nordhoff-Jung, of Washington, Columbia, U.S.A., has founded an annual prize of $500 bearing the above title. This prize is designed to encourage researches in the ætiology, prevention, and treatment of cancer. It will be awarded by a commission composed of members of the University of Munich, Bavaria, and be granted for the first time in December, 1923. The commission consists of Professors Borst, Doederlein, and Sauerbruch, with Prof. von Romberg as chairman. This body is empowered to elect successors. The award will be made as a recognition of the most conspicuous work in the world literature bearing on cancer research, done at a time antecedent to the allotment of the award. Though the prize will not be awarded on a competitive basis the commission invites all research workers in cancer to submit literature on this subject.

OBSERVATIONS ON THE EFFECT OF HISTAMINE ON THE HUMAN GASTRIC SECRETION.

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THE object of this paper is to give an account of an investigation into the effect of histamine (β-iminazolylethylamine) in small doses on the human gastric secretion. Several other workers have studied the effect of this substance on the gastric secretion of animals; Popielski,[9] Keeton, Koch, and Luckhardt,[6] Rothlin and Gundlach,[10] and Lim[8] found that histamine has a marked effect in stimulating gastric secretion in dogs and cats. Rothlin and Gundlach consider that, in its mode of action on the motor and secretory functions of the stomach, it behaves as a parasympathomimetic substance; they have suggested its employment for diagnostic and therapeutic purposes. On the other hand, Koskowski[7] denies that histamine acts on the vagal terminations; he believes, with Popielski, that it acts directly on the secretory cells. The effect of histamine on human gastric secretion has been studied so far as we are aware only by Carnot, Koskowski, and Libert.[2] These observers carried out their investigations by means of the Einhorn tube. They injected the drug subcutaneously and withdrew the gastric juice at intervals. The doses employed by them were 0·75–1·75 mg., the preparation used was the histamine ("crystallisée") of Hoffman Laroche. They describe an increased flow of gastric juice 30 to 55 minutes after injection, accompanied by an augmentation of total acidity, free HCl, and proteolytic activity.

Technique.

Our observations were carried out on 12 hospital patients, most of whom were convalescent and without any obvious disturbance of gastric function. The "one hour" test-meal was employed for purposes of comparing the nature of the gastric response to a constant test-meal (tea and toast) with the histamine response. The patients received no food for at least 12 hours previous to the experiment. The first thing in the morning a Rehfuss tube was passed into the stomach and the "overnight" juice withdrawn by means of a Record syringe, the position of the patient being changed during withdrawal in order to ensure complete emptying of the stomach. Ten minutes later aspiration of the entire stomach contents was again performed and again in another ten minutes, in order to determine the rate and nature of the "resting" secretion—i.e., the secretion occurring in the interval between the withdrawal of the "overnight" juice and the subsequent injection of histamine. Five minutes later a dose of histamine was injected subcutaneously, and following this the stomach contents were completely aspirated at intervals commencing five minutes after the injection and thereafter every ten minutes until secretion had ceased or returned to the normal.

The preparation of histamine employed was the ergamine acid phosphate of Messrs. Burroughs Wellcome and Co., containing approximately one-third of histamine base.[3] It was dissolved in water and made up so that 1 c.cm. of the solution contained 1·5 mg. of the salt; to guard against deterioration only small quantities were prepared at a time and these divided into doses and sealed in ampoules. The solution (0·9–1 c.cm.) was administered to the patient by subcutaneous injection in the upper arm. Any possibility of the psychic stimulation of gastric secretion by sight or smell of food, &c., was carefully avoided, and the disturbance caused to the patient by the Rehfuss tube reduced to a minimum by careful manipulation. The specimens of gastric content obtained were measured and examined for total acidity, free HCl, pepsin, mucus, and bile. Total acidity and free HCl were estimated by titration with N/50 sodium hydroxide, using as indicators dimethylaminoazobenzene and phenolphthalein, the results being stated in terms of the number of c.cm. of N/10 NaOH required to neutralise 100 c.cm. of gastric contents; the juice was not filtered when employed for titration. Pepsin was estimated by the method of Mett as modified by Nirenstein and Schiff. The Mett tubes were prepared by the Christiansen method,[5] and the results given in millimetres of egg-white digested. Mucus and bile were noted by naked-eye examination only. Pulse- and respiration-rates were counted at frequent intervals (10 minutes) throughout the investigations and the blood pressure estimated by the Tycos sphygmomanometer.

The following tables and charts represent the results from three of our cases, which are typical of the remainder in the series.

Results.

TABLE I.—Male, aged 22. Weight, 8 st. 4¾ lb.; "one hour" test-meal: total acidity 38, free HCl 18 (see Fig. 1).

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
Time (A.M.)	Amount of secretion (c.cm.).	Total acidity	Free HCl.	Bile.	Mucus	Pepsin (mm.).	Pulse-rate (p.min.)	Blood pressure (mm.Hg)
*9·0								
9·0	25	26	0	0	+ + +	8·3	120	120
9·10	16	19	0	0	+ + +	7·9	120	120
9·20	10	26	0	0	+ +	7·5	100	130
†9·25								
9·30	17	31	15	0	+ + +	10·9	112	130
9·40	14	55	30	0	+ + +	10·3	120	130
9·50	24	75	61	0	+0	10·9	112	125
10·0	38	69	54	0	+0	10·4	112	125
10·10	18	54	30	0	+	8·7	112	125
10·20	14	43	29	0	+	8·3	108	120
10·30	11	22	14	0	+	9·2	108	120

* Rehfuss tube passed.
† Hypodermic injection of 0·9 c.cm. histamine solution.

TABLE II.—Female, aged 18. Weight, 6 st. 3 lb.; "one hour" test-meal: total acidity 52, free HCl 28.

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
*9·54								
9·55	78	77	46	+ +	+ +	—		
10·5	13	15	0	0	+ + + +	—	100	125
10·15	12	22	8	0	+ +	—	100	125
†10·20								
10·25	14	44	28	+0	+	—	120	130
10·35	20	85	66	0	+	—	120	130
10·45	22	100	79	0	+	—	116	120
10·55	24	116	98	0	+0	—	108	120
11·5	14	94	77	+	+	—	—	—
11·15	22	—	—	—	—	—	108	118
11·25	22	88	72	+ +	+	—	100	116
11·35	14	65	50	+0	+	—	100	122

* Rehfuss tube passed.
† Hypodermic injection of 0·9 c.cm. histamine solution.

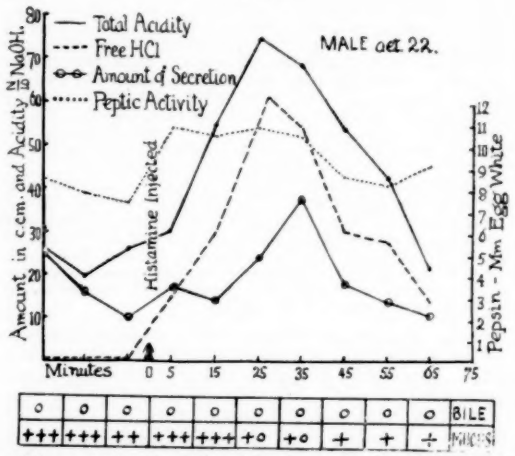
TABLE III.—Female, aged 22. Weight, 8 st. 3 lb.; "one hour" test-meal: total acidity 60, free HCl ? (see Fig. 2).

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
9·5	—	—	—	—	—	—	92	125
*9·10								
9·15	75	27	12	0	+ +	8·9	108	140
9·25	27	21	9	0	+ +	5·5	—	—
9·35	9	17	4	0	+ +	—	92	125
†9·40								
9·45	20	18	0	0	+	7·7	108	130
9·55	24	54	42	0	+	10·8	92	125
10·5	28	86	69	0	+	8·6	92	125
10·15	30	74	66	0	+	7·6	92	125
10·25	32	74	64	0	+0	6·4	92	125
10·35	47	74	57	0	+0	7·3	92	125
10·45	44	66	56	0	+0	7·7	92	125
10·55	26	62	49	0	+0	6·9	92	125
11·5	22	56	42	0	+0	6·8	92	125
11·15	20	48	32	0	+0	5·5	92	125
11·25	9	32	16	0	+0	5·1	92	125
11·35	9	32	16	0	+0	6·6	92	125

* Rehfuss tube passed.
† Hypodermic injection of 1 c.cm. histamine solution.

The general similarity of the response to histamine on the part of different individuals is well shown in the tables and charts. The amount of juice secreted in a given time, the total acidity, and free HCl figures all show an increase after histamine. This increase

FIG. 1.



Both here and in Fig. 2 the abscissæ represent time in minutes, the arrow indicating the moment of injecting histamine. The left ordinate represents both amount of secretion in c.cm. and also acidity (total and free HCl) in terms of c.cm. N/10 NaOH. The right ordinate represents mm. of egg-white digested in the Mett tubes. The absence or presence of mucus and bile are indicated below the chart (+0 = trace).

becomes evident within 15 minutes of the injection and continues until a maximum is reached. Maximum acidity is attained about half an hour after injection, while the maximum amount of secretion is not registered until some minutes later. The decline from the maximum point is usually more gradual than the rise, and occurs progressively until the normal is obtained. The curves for total acidity and free HCl are remarkably parallel in their course. The maximum acidity attained varies in individual cases, and we have observed maximum total acidity figures in normal individuals ranging from 75 to 125.

It will be noted that the curve of peptic activity follows in general the secretion and acidity curves. In some cases, however, the pepsin curve is less regular; nevertheless, it is of interest that in every one of our cases peptic activity registered its maximum in a shorter time than either acidity or rate of secretion. As regards mucus, it has been noted that this is usually plentiful in the juice obtained before the injection of histamine. Soon after injection, however, it diminishes not only relatively, but absolutely in amount, and this decrease appears to bear a relationship to increased acidity. It may be that the absence of the neutralising effect of the mucus is one factor contributing to the great rise in acidity. Without attempting to discuss its bearing on Boldyreff's theory[1] of the automatic regulation of gastric acidity by the regurgitation of alkaline fluids through the pylorus, we have observed that while in many of our cases the acidity of the gastric contents reached very much higher levels than those following a test-meal, bile was noted only infrequently. These contents, of course, were only permitted to remain in the stomach for short intervals before being withdrawn.

The pulse-rate and arterial blood pressure in our cases have sometimes shown an increase after the histamine injection, but these effects we attribute to the excitement of the patient. Flushing of the face was noted to occur shortly after the injection; this is in accordance with the observations of Dale and Richards[4] on the vaso-dilator action of histamine. No alterations of the respiratory-rate were noted in any of the cases. No patient complained of any discomfort or pain whatsoever either general or referable to the stomach throughout the investigation.

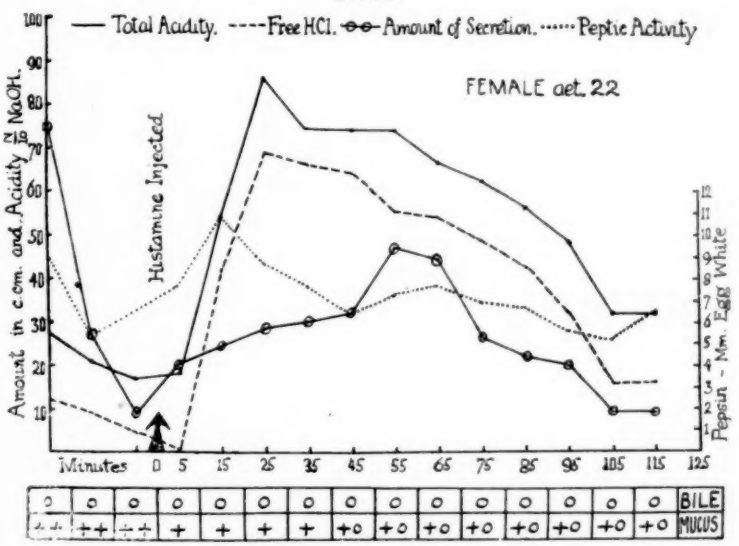
Summary.

1. Histamine in small doses given subcutaneously excites a flow of gastric juice in man.

2. The peptic activity increases after the injection and reaches its maximum, usually in about 5–15 minutes. Both total and free HCl increase and attain their maxima shortly after the pepsin maximum is registered. The secretory-rate follows a similar course, and usually attains its maximum last of all.

3. The dose employed by us to evoke gastric secretion does not produce any harmful gastric or general disturbance. This being the case, it seems possible that histamine may be employed as a means of investigating the state of gastric secretory function and perhaps as a therapeutic agent.

FIG. 2.


Total Acidity. ----Free HCl. ⊶⊶Amount of Secretion. ·····Peptic Activity
FEMALE aet. 22
Histamine Injected
Amount in c.cm. and Acidity N/10 NaOH.
Pepsin - Mm. Egg White
Minutes
0 5 15 25 35 45 55 65 75 85 95 105 115 125
BILE
MUCUS

We have pleasure in acknowledging our indebtedness to Prof. J. Meakins for permission to use his cases and for helpful suggestions.

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A FATAL CASE OF ACUTE INTESTINAL OBSTRUCTION

RESULTING FROM TRAUMATIC DIAPHRAGMATIC HERNIA.

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With Comments by W. MCADAM ECCLES, M.S. Lond., F.R.C.S. Eng.

WE venture to publish this case in detail, for although many cases of traumatic hernia of the diaphragm have been recorded since 1914, yet in this case the long period of normal good health which elapsed between the trauma and the onset of symptoms renders it worthy of record.

History.—Patient served with the infantry in France, and was wounded in the left chest in 1917. As he was taken prisoner at the time of wounding no notes of his treatment are available, but he stated that he was in a German hospital for nine months, and that he had hæmoptysis for 24 hours after being wounded. In October, 1920, he was examined for life insurance, and by the courtesy of the insurance company we are permitted to publish his medical report. He was then a well-developed man of 25 years, 5 ft. 10 in. in height, and 10 st. in weight, of athletic and abstemious habits. Apart from his wound he had never had any serious illness. The size of his heart, the position of the apex beat, and the heart sounds were normal in every respect. He had a scar 6 in. long and 2½ in. wide over the sixth, seventh, and eighth left ribs; the scar was pliable, non-adherent, and no loss of muscle or bone was detected beneath it. His chest expansion was 3½ in., and examination of his chest revealed no abnormalities. He stated that his digestion was excellent, and that his bowels were regular. A trace of albumin was found in his urine, but a specimen of urine examined four days later was found to be normal.

Treatment for Acute Intestinal Obstruction.—Apparently he remained in perfect health until June, 1921, when he was admitted to St. Luke's Hospital, Bradford, with acute intestinal obstruction. The following is a synopsis of his case-sheet.

June 16th, 1921: Excellent health until seven days ago, when he had severe pain in the epigastric region, accompanied with vomiting. The distribution of the pain spread and became most acute in the right iliac region. Pain diminished in severity two days prior to admission, and vomiting ceased at the same time. Bowels unopened for seven days in spite of three enemata. No previous attack of this nature. General condition on admission was very poor, his temperature being 100·8° F. and his pulse-rate 110. The abdomen was very distended, tympanitic all over, and liver dullness abolished. Distension was most marked in the right iliac fossa, where there was also slight tenderness. Recti muscles were not rigid, and abdominal respiration was present.

Laparotomy was performed, a right paramedian incision. There was a slight amount of free fluid in the peritoneum. The cæcum was very distended, as were all the intestines up to the splenic flexure. The appendix was normal. The descending colon was collapsed. As the man's condition was too critical to permit examination as to the cause of obstruction in the region of the splenic flexure, the wound was closed, and the cæcum was drained by means of a Paul's tube. On the 19th the bowels acted naturally; the tube was draining well. On the 21st the tube came out; patient very well. On the 23rd, temperature 104°, pulse 110. Impaired resonance over the left base posteriorly. Left pleural cavity aspirated, and 20 minims of clear fluid withdrawn. On July 4th foul-smelling pus aspirated from the left chest. Bacteriological report on the fluid: "Scanty T.B., pneumococci, staphylococci, *Bacillus proteus vulgaris*, and diphtheroid bacilli present." On the 5th eighth left rib resected, and the empyema drained. On the 18th large sloughs were escaping from the tube. On the 28th the chest was closed; bowels acting naturally and regularly since June 19th. On August 6th colostomy closed under general anæsthetic. On the 30th patient was discharged from hospital.

Readmission to Hospital for "Ptomaine Poisoning."—He remained in good health until April, 1922, when he was readmitted to St. Luke's. His case-sheet reports as follows: April 27th: Has been very well and has followed his occupation of tailor until two days prior to admission. On the 25th he ate heartily of salmon mayonnaise, but had abdominal discomfort the same night and vomited the next morning. On admission his temperature was 99·4°, pulse 104, and respirations 24. He had a small, easily reducible hernia of the middle of the operation scar. No distension, visible peristalsis, or tenderness. Abdomen was soft No dullness of the flanks; liver dullness was present. No signs of disease in the chest were noted except dullness over the left lower lobe.

His condition was provisionally diagnosed as ptomaine poisoning. He vomited small quantities of bile-stained fluid on the day of admission. On the 28th bowels acted well after an enema; on the 29th bowels acted slightly after an enema. On May 2nd patient developed hiccough. The stomach was washed out; no residue. On the 4th bowels not acting, no pain or tenderness, abdomen tumid left side, flanks resonant; patient delirious in evening. On the morning of the 6th patient died.

Post-mortem.—There is a hole 2 inches in diameter in the middle of the left dome of the diaphragm, the edges of which were rounded. Cardiac end of stomach and whole of transverse colon had herniated through this hole, and were very adherent to the posterior wall of the thorax. Lower lobe of left lung collapsed and universally adherent. The small intestines slightly distended and congested. All other organs appeared perfectly healthy.

From the above history we conclude that the patient suffered a wound of the diaphragm in 1917, and, as frequently happens, this wound never healed. His perfect health and perfect digestion for three years after receiving the wound suggests that up to 1921 no abdominal viscus herniated through the hole. The operation in 1921 showed that only a small portion of the transverse colon was obstructed, but empyema resulted from infection from the obstructed part of the colon. The probable result of the empyema was to enlarge the hole in the diaphragm, and from adhesions rendered the herniated portion of the colon irreducible. Though the condition found post mortem must have been present for some time, for the adhesions binding the intestines to the posterior thoracic wall were very dense, yet the good health of the man between September, 1921, and April, 1922, suggests that the development was gradual, and doubtless there was concurrent compensatory development of the muscle coats of the proximal gut which masked the increasing obstruction.

Remarks by Mr. W. MCADAM ECCLES.

This case is of great interest from the point of view both of surgery and of examination for life insurance. There can be but little doubt that the authors' explanation of the condition is correct. Proof that a second attack of obstruction can occur is instructive, and shows that an unclosed traumatic diaphragmatic hernia is always a source of grave danger. The careful examination by the life insurance company proves the great difficulty of demonstrating the presence of such a hernia. When a man, who has been wounded through the chest, with possible damage to the diaphragm, desires to obtain a life insurance policy the examiner is confronted with the possibility of overlooking a condition, which in this particular case led to fatal results within a comparatively short time after the proposer had been accepted. It is impossible to say how many cases of unsuspected traumatic diaphragmatic hernia are in existence, but the number of men who were wounded through the chest and diaphragm and have survived probably amounts to several hundreds. Under these circumstances it becomes a question whether every such person on presenting himself for life insurance should not be examined by means of an opaque meal and X rays, which in many instances clearly demonstrates the lesion. In my paper "Lives Damaged Through the War," read in March, 1919, before the Assurance Medical Society, I overlooked the possibility of death from strangulated diaphragmatic hernia, although I considered damage to the abdominal wall producing a ventral hernia not cured by operation to necessitate rejection. A traumatic diaphragmatic hernia should obviously come under the same category, if it has been demonstrated by X rays.

THE OPERATIVE TREATMENT OF SEPTIC MENINGITIS.

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UP to the time of the Tenth Otological Congress, held at Paris in July, 1922, when Mr. G. J. Jenkins read a paper on the successful operative treatment of septic meningitis occurring as a complication of aural suppuration, the condition was regarded by most as inevitably fatal. The extreme importance of Mr. Jenkins's work, following on that of Ballance and Eagleton, leads me to ask forbearance, in case the reader be already conversant with it, for free quotation from Mr. Jenkins's conclusions, for which quotation he has kindly given me permission. My object in so doing, and in reporting the subsequent case, is to bring to greater notice the undoubted value, both as regards diagnosis and treatment, of Mr. Jenkins's thesis, and to show further that operative interference can be successful even in a case of well-established meningitis, given the early recognition of symptoms and localisation of the focus of maximum infection.

Problem of Drainage.

Successful drainage of the infected area in the meninges is no more to be regarded as impossible than the successful operative treatment of peritonitis. It is true that in the former we are dealing with a far more complicated serous space, in part trabeculated and in part in the form of cisternæ, enveloping an organ of extreme delicacy; nevertheless, infection, as in the peritoneum, for a time at any rate, is localised. If this time is seized upon there seems no valid reason why drainage of that infected area, even though it be not shut off—as would be the case with a localised sub-dural abscess—should not be as successful as the drainage of a commencing general peritonitis. The main point of difficulty is unquestionably the early diagnosis of the existence of a commencing meningitis, often masked by the signs of an acute mastoiditis or labyrinthitis, and having diagnosed its existence, to localise it to trabeculated regions or cisternæ.

The fact cannot be sufficiently laboured that to look for success by operative measures necessitates diagnosis before the development of the classical symptoms and signs of meningitis. The drowsiness, occipital headache, nuchal tenderness, slight rigidity, moderate temperature, with comparatively slow pulse, absence of papillœdema, and marked cerebro-spinal fluid changes, commented upon by Mr. Jenkins as characteristic of cisterna infection, are well illustrated by the case quoted below. They will be noted in sharp distinction to the symptoms described by him as characteristic of infection in the trabeculated region over the temporo-sphenoidal lobe, as would occur in spread through the roof of the middle ear—irritability, vague headache, especially over the affected ear, higher temperature with proportionately rapid pulse, photophobia, and but slight alteration in the cerebro-spinal fluid.

Drainage Routes.

Mr. Jenkins strongly advocates the translabyrinthine route for drainage of the cisterna pontis, urging in its favour that since the internal auditory meatus is the general route of infection from the ear to the cistern, it is obviously wrong to leave this "backwater" of the cerebro-spinal system undrained.

In the first case in which I attempted drainage of the cisterna pontis for septic meningitis, following a fractured base in a child and subsequent infection through the membrane, I did not follow his suggestion, but drained the cistern by a tube passed along the back of the petrous temporal between the posterior labyrinth and the lateral sinus. A free flow of turbid cerebro-spinal fluid resulted, all pressure signs disappeared, and the child improved for a time, but died subsequently from a generalised lepto-meningitis. Post-mortem examination proved the soundness of the translabyrinthine route, in that while the drain lay perfectly in the cisterna pontis, the fissure and route of infection lay through the internal auditory meatus, and this and the neighbouring bone were full of purulent and undrained exudate.

In the case quoted below the actual route of infection is obscure. There is no doubt that the primary focus of infection was in the cisterna pontis, but neither then nor subsequently was there any sign of labyrinthine involvement, and it appeared reasonable to suppose, in view of the stormy course after the mastoid operation, either that the infection was without involvement of the internal ear, or that it was in the nature of a "fixation area" in a generalised septicæmia. Under these circumstances it did not seem justifiable to drain via the internal auditory meatus, and as a very prominent lateral sinus coming close up to the posterior labyrinth rendered the alternative route difficult, I preferred to drain the cisterna pontis by a horizontal incision through dura below the lateral sinus, immediately behind its point of curvature downwards. This gave an admirable access and by lifting the cerebellum gently with a narrow flat spatula I induced a free gush of turbid cerebro-spinal fluid from the cisterna, which continued easily along the drain. At the same time a drain was introduced, through an incision in dura and arachnoid above the sinus, forward to the region of the Sylvian fissure. This was probably unnecessary, as the symptoms were certainly those of cistern infection rather than of temporo-sphenoidal infection.

The clinical reports (by Dr. E. C. Malden) on the two subsequent specimens of cerebro-spinal fluid withdrawn by lumbar puncture are interesting, as illustrating Mr. Jenkins's statement that although the symptoms of meningitis may be relieved at once, as they were in this case by drainage, the latter must be maintained until it is obvious by examination of the cerebro-spinal fluid that the infection is checked, which evidently did not occur here until between the sixth and ninth days after operation.

A female, married, aged 37, was admitted to King Edward VII. Hospital on Dec. 31st, 1922, with a history of influenza, followed by pain in right ear and discharge on day preceding admission. On admission: Temp. 99° F.; pulse 100; profuse purulent discharge of right ear through an antero-inferior perforation; general mastoid tenderness; œdema of posterior meatal wall; no nystagmus; reflexes normal.

Operation.—A Schwartze operation was performed on the right mastoid. Free pus in antrum and air cells; very cellular type of mastoid with prominent lateral sinus and deep antrum. Operation at night; no bacteriological examination. On Jan. 1st and 2nd, 1923, temp. rose to 101°; no adverse symptoms except considerable nasal catarrh and some frontal headache. On the 3rd, temp. normal all day; no evidence of actual sinusitis. Inhalations of menthol relieved headache. From the 4th to the 7th, temp. fluctuating 102°–103° at night, normal in morning. Wound dressed, clean; aural discharge ceased. No alteration in reflexes, no vertigo or nystagmus, no occipital pain, headache ceased. From the 8th to the 11th temp. progressively falling to normal. Patient better. A blood count on the 8th showed 11,200 leucocytes per c.mm. On the 12th, temp. normal all day; mastoid wound very clean. Membrane healed. Blood culture, taken subsequently, proved negative. From the 13th to the 16th temp. rising to 100° at night; no adverse signs; patient taking food well. No headache. On the 17th temp. normal all day. On the 18th temp. in morning 97·4°. Condition not so satisfactory. Patient drowsy and complaining of vaguely localised headache. Late at night temp. rose to 100°, pulse 104. Patient complaining of more severe and more localised occipital headache. On the 19th, occipital headache bilateral and severe, nuchal tenderness, slight but definite rigidity, temp. 101°, pulse 110. Knee-jerks +, and plantar reflexes normal, abdominal reflexes present except upper right quadrant; patient vomited once; no vertigo; nystagmus to left, pupils equal and active, discs normal.

Lumbar Puncture.—Fluid not under pressure but turbid. Cell count 7200 per c.mm., the majority polymorphonuclear leucocytes; a few Gram-positive diplococci seen; culture subsequently sterile; no reducing substances present.

Second Operation.—Mastoid incision extended by horizontal incision backwards and flaps turned up and down. Mastoid wound clean, but with little or no reaction. Bone removed over a wide area upwards from mastoid cavity to expose outer surface of temporo-sphenoidal lobe and backwards and downwards exposing lateral sinus and dura below tentorium.

Free hæmorrhage from lateral sinus emissory vein. Sinus normal. Wound washed out with iodine. A few minims of fluid withdrawn by hypodermic needle from subarachnoid space of middle fossa and also from that of posterior fossa below lateral sinus. The former subsequently proved steriie, but that from the posterior fossa was turbid, and showed a few of the same Gram-positive diplococci observed in the cerebro-spinal fluid (C.-S.F.). Subsequent culture was sterile. An incision was made in the dura and arachnoid over the temporo-sphenoidal lobe, and a gauze drain wiped over with bipp was passed forward to the region of the Sylvian fissure. A similar but larger incision was made in the dura below the horizontal part of the lateral sinus. A narrow spatula was passed in gently below and in front of the cerebellum to the cisterna pontis. A free gush of C.-S.F., turbid and under pressure, resulted, and continued freely along the gauze drain introduced. The wound was packed lightly with bipp gauze and dressed.

Subsequent Progress.—Immediately after operation temperature fell to normal, all headache and rigidity disappeared, nystagmus to left increased and also appeared in upward direction. On Jan. 22nd the wound was dressed. Patient very much better, no symptoms whatever. Lumbar puncture repeated. Fluid under low pressure, less turbid; cell count 6500 per c.mm.; no bacteria seen; no reducing substances present. The drain in the middle fossa was removed, that in the subtentorial area removed, and replaced with free flow of C.-S.F. On the 25th wound again dressed. Patient very well; temp. had remained below 99°. Lumbar puncture repeated; fluid under low pressure, almost clear; cell count 130 per c.mm.; no bacteria seen; slight reduction of Benedict's solution. Wound clean, all intradural drains removed. On the 29th wound again dressed. Covered with commencing granulation tissue. Temperature and pulse normal, patient very well. Complaining of no symptoms, sleeping and eating well. Feb. 1st, progress uneventful. Wound clean and granulating rapidly.

I am much indebted to Dr. E. C. Malden for the clinical reports from the pathological laboratory, King Edward VII. Hospital, Windsor.

SUPPURATIVE ARTHRITIS SIMULATING ACUTE APPENDICITIS.

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THE following case of suppurative arthritis of the eleventh right costo-vertebral joint simulating acute appendicitis seems worthy of record, since, as far as I am able to learn, nothing similar has been previously reported.

The patient, a well-nourished girl of 9 years, had been a breast-fed baby. When a few months old she suffered from bronchitis; at the age of 3½ years she had measles, at about 7 whooping-cough, and shortly afterwards was in hospital for about nine weeks suffering from scarlet fever. Since then she had never quite recovered her former strength, and had suffered from frequent whitlows, although she had had none during the past year. Between six and eight months ago a large abscess appeared in the right groin, which discharged for some time.

On Feb. 27th, 1921, the child, after returning home from a walk, stated that she had tripped in a hole and had hurt herself. There was a slight abrasion over the upper part of the right tibia, and she complained of pain in the right hip. For the rest of the day, and on the 28th, there was no complaint of pain. On the morning of March 1st she ate a good breakfast, but on returning from school about 5 P.M. had a shivering attack. The mother noticed she was feverish and gave her a purgative. On the morning of the 2nd the child was unwell, and had very little food all day. About 10 o'clock in the evening she complained of pain in the abdomen, and of a slighter pain in the right hip, and spent a restless night. On the 3rd the child said she felt better, but a doctor was called in about mid-day. Her temperature was then 101° F., pulse rapid, respirations not increased disproportionately, and she complained of pain in the right loin. She was tender in that region, and also over the right ileum, so much so that the diagnosis of an osteomyelitis of that bone was considered by the doctor in attendance. At 6 P.M. the same day the temperature had risen to 103°, the pulse was more rapid, and the tenderness had become more widespread, affecting the area over the right iliac fossa, and appearing also over the lower ribs. There was no history of vomiting. She was admitted to Lewisham Hospital about 9 P.M. as an atypical case of acute appendicitis, the preceding more detailed history being obtained later.

Condition on Examination.—The child looked ill, and it was difficult to examine her properly on account of her irritability. All the pain was referred to the right loin. There were no signs of trauma in this region. The whole of the right side of the abdomen was found to be rigid and tender, the tenderness extending from the lower ribs above to the great trochanter below, and limited by the mid-line in front. The thigh was flexed slightly, and internally rotated. The right erector spinæ muscles were rather spastic. The hip-joint appeared normal. A pelvic examination and an examination of the urine revealed nothing abnormal. Examination of the lungs showed nothing abnormal, and the respiration-rate was not unduly increased. The reflexes were slightly exaggerated. The anomalous physical signs led to a suspicion of an osteomyelitis of the spine, and this diagnosis was carefully considered, but in view of the good mobility and absence of tenderness on pressure over the spinous processes it was excluded. A possible diagnosis of a retro-cæcal or lateral cæcal inflamed appendix with an abscess lying in front of the right kidney was made.

Operations.—Under light open ether anæsthesia I made a muscle-splitting incision at a higher level than usual. The appendix was found along the outer side of the cæcum, adherent to it in its first part, but free in its distal portion and perfectly normal in appearance. As this organ obviously could not be the cause of the symptoms the remainder of the abdomen was rapidly examined and nothing abnormal was found. The appendix was removed and the abdomen closed. On the morning of the 4th the temperature had fallen, although the child still looked ill, and during the day she became much worse, being incontinent and delirious, complaining constantly of pain in her right side. During the night of the 5th, the temperature rose rapidly until it reached 105·8°. At that time the abdomen was as rigid as before the operation, and somewhat distended. On examining the urine again it was found to contain a large amount of acid products as tested by the ferric chloride reaction. The reflexes were still normal, but there was slight head retraction, so a lumbar puncture was performed. The cerebro-spinal fluid was not under pressure.

On the 6th some slight moist sounds were heard at the lung bases, and the abdomen seemed more lax. The child was much worse, although there was a considerable diminution in the amount of acid products excreted. On the morning of the 7th the patient was delirious. An intravenous infusion of sodium bicarbonate was given, which led to a dramatic improvement, but this was not maintained, and the child died, about 11 P.M., in coma.

Post-mortem.—Dr. T. C. Higgins and I performed an examination on the following day. There were some hypostatic congestion at both lung bases and a few small areas feeling like infarcts. Microscopical sections confirmed this, and cultures gave a pure growth of *Staphylococcus aureus*. In the left pleural cavity was a small semi-translucent mass of greenish lymph, which showed on microscopical examination a few leucocytes and on culture gave numerous colonies of staphylococci, and on liquid media a few of *Streptococcus longus* also. In the right pleura were a few drachms of clear fluid. The heart muscle showed some cloudy swelling and dilatation, but was otherwise normal. The stump of the appendix was clean and healing, and nothing abnormal was found in the remainder of the abdomen. Hip-joint, brain, and spinal cord were normal. Outside the spinal dura, over the foramina of the tenth and eleventh intercostal nerves and vessels in the right side, a small quantity of thick whitish pus was found, and where it lay in contact with the dura there was slight pachymeningitis, but no evidence of inflammation could be seen from the inner aspect.

On stripping off the pleura in the right side we found that the anterior part of the capsule of the eleventh costo-vertebral joint had been eroded, and that the head of the rib could be pushed forwards onsiderably by pressing in the cut sternal extremity, showing that the remainder of the capsule had also been destroyed. In the intercostal space above and below, pus could be seen shining through the posterior intercostal membrane. The total amount of pus present did not exceed at the most two drachms. Direct examination of the pus showed Gram-positive cocci, and culture gave colonies of *Streptococcus longus*. No thrombo-phlebitis was noted in the intercostal veins. On removing the eleventh vertebra with its attached ribs we found the middle costo-transverse ligament on the right side to be partially separated, due to the tracking of the pus. The cartilage on the vertebra itself was eroded, while that on the head of the rib was intact. Section of the body of the vertebra showed no sign of suppuration. The remaining bodies and costo-vertebral joints were examined and found to be normal.

On looking back over this case, it is possible that a correct diagnosis might have been made in the earlier stages, although even then the pain appears

to have been located not at the seat of trouble, but mainly in the distribution of the tenth and eleventh thoracic nerves. As the area over McBurney's point is supplied by the eleventh nerve and the appendix receives filaments from that nerve and possibly from the tenth, a diagnosis of appendicitis would have to be considered. It is interesting to note that although the tenth and eleventh nerves in this case were involved primarily, yet there was an "overflow" as explained on physiological grounds, leading to hyperæsthesia of the nerves above and below.

The fact that the child was liable to septic sores, abscesses, &c., suggests a chronic bacteriæmia from some septic focus, possibly her tonsils, although she never suffered from sore-throats. In the fall on her side it is possible that the brunt of the shock came on the eleventh right rib and injured the cartilage on the synovial membrane of the joint, leading to a synovitis which suppurated, or perhaps to an osteomyelitis of the vertebral body just deep to the cartilage, leading clinically to the same result.

On looking through the literature, I have been unable to find a similar case. Makins and Abbott, in 1896,[1] collected cases of acute osteomyelitis of the spine, some with secondary involvement of the costo-vertebral joints. Subsequent to this a few cases of acute osteomyelitis of the spine are reported in various papers, but the costo-vertebral joints are not mentioned. In 1915 Volkmann collected 62 cases, and in 1918[2] Schlesinger collected a number of additional cases. Recently Plenz[3] has reported two cases of acute osteomyelitis of the spine, but in none of these is a primary suppuration in the joint dealt with. It seems extremely probable that cases similar to the one I have reported are not so excessively rare, since during life diagnosis may be impossible and post mortem the lesion may very easily escape notice.

[1] Makins, G. H., and Abbott, F. C.: Annals of Surgery, 1896.
[2] Schlesinger, H.: Mitt. a.d. Grenz. geb. d. Med. u. Chir., Jena, 1918, xxx., 393–402.
[3] Plenz, P. C.: Deut. med. Wchn., 1921, xlvii., 416.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ANÆSTHETICS.

A MEETING of this section was held on March 2nd, Dr. A. L. FLEMMING, the President of the section, being in the chair.

Dr. W. J. MCCARDIE (Birmingham) read a paper on

GENERAL ANÆSTHESIA IN ORDINARY DENTAL PRACTICE.

He said the administration of anæsthetics in dental work differed from that in ordinary surgery in that it was more intimately concerned with the mechanics of respiration, and because the patient usually had had no special preparation before the administration, and was mentally alert, bodily active, often very nervous and critical of his surroundings. Dr. McCardie considered that when all or a considerable number of teeth needed to be extracted everything possible should be done at one sitting, and this was preferred by the patient in most instances. In former days extractions were done almost entirely for pain or local disease; but now toxic conditions and root diseases required a more prolonged anæsthesia. For many years he had regarded nitrous oxide as the main anæsthetic in dental practice; and he had had no fatality during anæsthesia, nor had to use his tracheotomy set. One case in 23 required a major anæsthetic—ether or chloroform—solely or mainly. Of 91,734 anæsthesias given between 1896 and 1922 in the hospital to which he was attached, 3500 were ethyl chloride, 200 ether, 88,000 gas alone. No oxygen was given. No deaths were recorded either during or after anæsthesia. No fatality nor even tracheotomy had occurred during anæsthesia in the life of the Birmingham Dental Hospital, a matter of 40 years. In a large proportion of the 100,000 gas cases the anæsthesia was carried out by students, a fact which showed it was a safe administration. Students at the hospital were taught no anæsthesia except nitrous oxide. Gas and oxygen combined, unless exceptionally well administered, he regarded as of comparatively little value in dental work. One set of American statistics gave two fatalities in over a million cases.

The Choice of Anæsthetic.

The choice of the anæsthetic depended on the type and duration of the operation; his preference was nitrous oxide with or without a very small quantity of ether. If a patient suffered from serious heart or lung troubles or toxic diseases, gas and oxygen seemed best. During the war nitrous oxide was found not to suffice for soldiers; it was best to treat them as major surgical cases, preparing them overnight, and giving morphia and atropine beforehand, then ether, followed if necessary by chloroform. For young children he found prolonged gas and oxygen best. Induction took from one to three minutes. Ethyl chloride upset them too much. If patients bore gas badly they were but little upset by a major anæsthetic. There might be dilatation of the heart in the absence of cyanosis. Sometimes the physician still told the anæsthetist what form to use, a matter which was outside his province. When people required their teeth extracted at a sitting they should go to a nursing home for the purpose. Ether, Dr. McCardie considered, was as safe as gas for dental surgery. In many prolonged cases he believed the substitution of ether for gas would have resulted in less shock to the patient; the shock was generally felt most after reaching home; if he could have been put straight to bed this might have avoided any shock. One patient, aged 55, had been under treatment for high blood pressure. He was given gas for the extraction of two teeth; he appeared healthy and was of good physique. He died five hours after the operation from coma. That was the only death in connexion with dental administration he had ever come across. For very nervous people a dose of bromide on the night previous to the operation was very useful. Aspirin was not advisable as it tended to cause cyanosis. For giving immediately before the anæsthetic, brandy or whisky were the only sedatives which should be considered. If a patient turned grey or blue, ether proved a good stimulant. An etherised sponge gave a gas-and-oxygen effect. For dental work the Ormsby inhaler was far better than the Clover, because any quantity of ether could be poured into it and the deepest anæsthesia quickly occurred. In the case of small children or obstreperous adults who would not breathe as directed he applied the Ormsby straight away. Ether caused less after-effects than did ethyl-chloride. For major dental cases, after deeply etherising, he continued with light chloroform anæsthesia. Respiratory trouble, caused by depression of the jaw and pushing back the tongue during operations on the lower teeth, could be overcome sometimes by the use of a mouth tube. On coming round, patients should not be allowed to see a bright light as it hastened the return to consciousness, and this might be accompanied by excitement. On two occasions teeth had slipped into or in the neighbourhood of the larynx. One coughed up the tooth after a violent spasm soon afterwards; the other did not eject it for two days. He also related two cases in which severe bleeding followed extractions. In one it came from a plexiform angioma or a cirsoid aneurysm.

Summarising his conclusions, Dr. McCardie said: (1) Dental operations should be concluded at one sitting, even if it meant resorting to a major anæs-

thetic; (2) nitrous oxide, being the prolonged method, was the best routine anæsthetic for qualified men and students; for difficult cases, deep ether followed by light chloroform anæsthesia was best; (4) major cases should be dealt with only in hospital; (5) ether from an Ormsby inhaler gave the best results in the case of children and troublesome adults; (6) shock after long dental operations under gas developed mostly as the result of asphyxia, and the addition of a little ether during the anæsthesia would greatly improve the condition of the patient.

Discussion.

The PRESIDENT said he did not feel so keen as Dr. McCardie did about getting the dental treatment done with one administration. But he was sure the opener's attitude was dictated by his desire to do his best for the patient. An interesting point was the comparison of the value of air as against oxygen.

Mr. WARWICK JAMES showed an instrument he had devised for fixing the mandible forward, thus preventing it from dropping back while the patient was under general anæsthesia, and so restricting respiration. While he was working at the Great Ormond-street Children's Hospital for ten years, ethyl chloride was found to be the best anæsthetic for the young patients, even for dealing with a large number of teeth, especially if the dentist kept the mandible forward.

Mr. CARTER BRAINE was pleased to hear the Ormsby inhaler praised; for all severe and prolonged dental operations he relied upon it. If the majority of the teeth to be extracted were in the lower jaw it was best to have the patient seated. To keep the head rigid Mr. James and he had devised a horseshoe-shaped cushion filled with sand. He did not think sufficient care was taken to prevent teeth being swallowed or inhaled during extraction; this was a bounden duty on the part of the dentist.

Sir FRANK COLYER said it should always be the dentist who ought to decide how many teeth should come out; and he did not agree that a dental operation should always be completed at one sitting. Especially in the case of dental sepsis the best procedure was to extract a small number at a sitting. The dentist should have in his mind that every second during which the patient was under the anæsthetic was a time of danger. Continuous gas was not a good anæsthetic for a prolonged dental operation; but it was useful for operations of short duration, and under it the dental surgeon felt he had a little longer for his operation than under gas. If there was likely to be any difficulty about removing the teeth the patient should be taken to a nursing home for the purpose. He was sure it was right to plug the pharynx. Some patients took gas very badly; he had had patients who suffered from a kind of syncope after it; it acted on them almost as a cardiac poison, and he would like to know how this type could be recognised beforehand. Oxygen led to distress in some patients. People with a high blood pressure should have gas and oxygen, he thought.

Mr. H. BELLAMY GARDNER insisted on the value of adhering to one method of administration on all possible occasions, as it taught efficiency and enabled one to know exactly what one could do. Nitrous oxide and oxygen anæsthesia could be maintained practically indefinitely. For prolonged cases, however, for which ether had been decided on, he gave gas and ether, and continued with chloroform. In the case of powerful men who required six or seven teeth removed, he gave 1/6 gr. morphia half an hour before the operation; this rendered the gas and oxygen anæsthesia comfortable and free from dreams. The sitting posture was best, but practically no nursing home in London had a dental chair always available. He fully agreed with what had been said about the value of brandy.

Mr. H. BOYLE did not agree as to the need for completing a dental operation at one sitting. He had been giving gas and oxygen for 20 years; it caused less of that feeling of suffocation which many who had gas alone complained of. If the dentist required extra time he continued with gas alone, while the patient breathed air through the mouth. Prolonged gas administration was a great boon to the dentist as it enabled him to do his work more leisurely. He quite agreed it was not within the province of the physician to suggest the kind of anæsthetic; indeed, the majority of physicians knew very little about anæsthetics. Certainly a long and difficult case should be taken to a nursing home.

Mr. F. COLEMAN spoke of the improvement in the operations in dental cases due to the fact that the anæsthesia was now more prolonged than formerly, and to the better opportunity for developing the sense of touch, by which one felt instinctively how much strain a particular tooth would safely stand.

Dr. H. HILLIARD thought the extraction of six or eight teeth should be regarded as a major operation, and should only be done either in the patient's home or in a nursing home. He was a warm advocate of ethyl chloride as an anæsthetic.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

OBSTETRICAL SECTION.

Exhibition of Cases and Specimens.

A MEETING of this section was held on Feb. 23rd, Dr. BETHEL SOLOMONS, the President, being in the chair.

Dr. R. E. TOTTENHAM exhibited a modification of the Rotunda syphon douche, which he stated was cheaper than the Rotunda syphon douche, and had the advantage that if any part of the rubber gave way it could be renewed without purchasing a whole new douche. Smith and Sheppard were the makers.

Sir ANDREW HORNE showed two specimens.

Malignant Ovarian Tumours; Fibrocystic Tumour.

It was very rare, he stated, to find two large ovarian tumours in the same woman; the patient, aged 46, had had one child five years previously, and had menstruated perfectly regularly up to May, 1922. She then missed two periods, but had been regular since. She was sent up to consult Dr. P. McArdle, as a case of doubtful pregnancy, but was herself convinced that she was pregnant. She was found to have a cystic tumour. An operation was performed; the two tumours filled the abdomen, and at the upper portion of the abdomen there was some ascitic fluid. William Colles had pointed out that, when a tumour was found with ascitic fluid, it generally indicated malignant disease. In the second case a woman, aged 46, had been married one year; just before she married menstruation had ceased, although she had always been perfectly regular. She complained of soreness in the chest at both sides, hardness in the abdomen, and a frequent desire to micturate. On vaginal examination he found that the body of the uterus was displaced, and the cervix could only be reached with the greatest difficulty. The tumour could apparently be pushed away from the uterus. On operation the tumour proved to be a subperitoneal fibroid, which grew from the lower edge of the cervix uteri. The patient made an uneventful recovery. The tumour was not malignant.

The PRESIDENT said that the diagnosis of double ovarian tumours and twins was always easy as the tumours were plainly palpable in most cases. In the fibrocystic tumour he (Dr. Solomons) wished to know if a pre-operation diagnosis was made as it seemed impossible.—Dr. D. G. MADILL asked what the pedicle consisted of; if it was an enlarged or elongated cervix, or if it was the vagina drawn up. Dr. W. D. O'KELLY asked if, in the first case, there was any glandular involvement.

Sir ANDREW HORNE replied that in the second case he thought he was going to operate on a case of ovarian tumour, and was therefore surprised to find

a large fibrocystic tumour in the uterus. The pedicle was very short, thick, and solid, made up of fibromatous tissue and attached not to the uterus but to the super-vaginal portion of the cervix. In the first case there was no evidence of external glandular enlargement, but he did not know what was found at the operation, as he was not present. He was inclined to think that the tumours were both primary, and not secondary.

Septic Uterus.

Dr. GIBBON FITZGIBBON showed a specimen of a septic uterus. The patient was sent into hospital after being four days in labour. The child was alive. On admission patient's temperature was 98° F., but it gradually fell to 95·4°. The pulse was 100 and remained at that till the patient died. In answer to a question from Dr. H. E. GOULDING, Dr. FITZGIBBON stated that there had not been time to get a blood examination carried out.

Dr. A. H. DAVIDSON read a paper on a case of

Traumatic Subcutaneous Emphysema Complicating Labour.

Dr. FITZGIBBON said that he had seen this patient with Dr. Davidson, and the condition was one of great interest. He thought that Osler's explanation of emphysema was the best—namely, that it arose from a rupture of the bronchi in the mediastinum.—Sir ANDREW HORNE said that he had seen three or four similar cases. Labour had been very severe during the second stage with severe uterine contraction. On the second day there was a regular crackling under the skin. No treatment was adopted, but at the end of eight or nine days the emphysema had disappeared. He agreed with Dr. Fitzgibbon regarding the cause of emphysema.—Dr. DAVIDSON, in reply to a question from Dr. MADILL, said that the patient had had no cough.

Dr. L. CASSIDY read a paper on a rare case of maldevelopment of the female genital organs, and showed specimens.

Deep X Ray Therapy.

Dr. G. E. PEPPER read a paper on this method, as used in the Schauta Klinik, Vienna. He described the "Symmetrie" apparatus devised by Prof. Seitz and Wintz, of Erlangen, the various instruments used for measuring the dosage, and the method of estimating penetration of rays by means of the water phantom. He referred to the importance of accurately centring the tube in each field, the susceptibility of different patients to radiation, and the necessity of a blood count before each treatment, and described the Vienna method of treating carcinoma of the uterus, and the application of X rays in cases of essential bleedings, amenorrhœa, and fibro-myomata. He compared X rays with radium in the treatment of malignant disease, and advocated the combined use of both. The action of X rays on malignant cells was said to be due to ionisation, which causes lecithin to split up and liberate cholin which poisons and kills the cells. Cholin is set free in the very cells where its action is required, because malignant cells and tissues particularly sensitive to X rays, such as testicles and ovaries, contain higher percentages of lecithin than other tissues.

Dr. W. C. STEVENSON thought that as much constitutional disturbance occurred when X ray and radium treatment was given as after an operation, but that one treatment only did not give a patient a proper chance. If the growth was extensive there was a chance of increasing it by radiation unless deep X ray therapy was used.—Dr. L. L. CASSIDY thought that any fresh advance in the treatment of cancer would be made by X rays. His experience in hospital regarding radium had been rather unfortunate; in two cases its application had appeared to stimulate the growth, although in another case of inoperable carcinoma the patient was very much improved.—Sir ANDREW HORNE remarked on the effect of X rays in stopping hæmorrhage, and asked how it was known clinically that X rays had destroyed cancer cells.—Dr. MADILL asked if moderate doses of X rays would have any effect on an old-standing case of pelvic cellulitis.—Dr. J. F. CUNNINGHAM asked how the radium was filtered before insertion into the uterus, and whether radium emanations were of any use.—Dr. G. TIERNEY said that according to Erlangen technique, an eight-hour dose of X rays was not strictly correct; in Erlangen Coolidge tubes were now used exclusively, and the unit skin dose was obtained in a little over 20 minutes. In some cases constitutional reaction was severe, but never as severe as after operation. Generally speaking, the indications and contraindications for radium and X ray treatment were exactly similar. The advantage radium had over X rays was that screening was much more effective.—The PRESIDENT said that the present state of affairs with regard to treatment of cancer was a race between radiology and serums; operative treatment, combined with one of these, would probably win. He had read of collapse and anæmia following the Erlangen treatment; his feeling was that when a growth had been satisfactorily eradicated post-operative X rays were dangerous.

Dr. PEPPER said, in reply, that constitutional effects were undoubtedly produced after the application of X rays, but they did not last; patients were often able to return home in two or three days. In some cases, after treatment was over, a small operation had been performed, and it had been found that the cancer cells had been destroyed by the X rays. He could not tell what the result of X ray treatment would be in a case of pelvic cellulitis. Emanations were not used in Vienna, as they had a considerable stock of radium. Gas tubes were there used entirely, as they were much cheaper than Coolidge tubes.

NEWCASTLE-UPON-TYNE AND NORTHERN COUNTIES MEDICAL SOCIETY.

A MEETING of this Society was held in the Royal Victoria Infirmary, Newcastle-upon-Tyne, on Feb. 1st, when Mr. D. P. D. WILKIE delivered an address on

Diagnosis in Surgery.

The address was a plea for the coöperation of practitioner, physician, and surgeon in the interpretation of early symptoms of disease. Mr. Wilkie said that our greatest need at the present time was for surgeons who knew *when* to operate rather than *how* to operate. The advances in surgery in the next decade would surely be in the accurate and timely diagnosis of the conditions which we had now learned to treat by surgical means. Diagnosis was the crux of modern surgery, and the increasing success of the latter was due, in his opinion, to the improved diagnoses of the general practitioner.

Mr. Wilkie then enlarged upon what he considered to be the fundamentals of diagnosis. He placed first clinical instinct, which came naturally to the few, but to the majority was the outcome of prolonged, purposive and careful observation. The surgeon had a peculiar asset in the training of his diagnostic acumen in that so often he could lay bare the true pathology after having studied the signs and symptoms. The physician and practitioner might to some extent share this advantage by systematic attendance at operations on their cases. Next to clinical instinct, Mr. Wilkie put clinical history. The interpretation of symptoms was a problem which urgently required the coöperation of all branches of the profession. Complete physical examination was the next essential. There was a noticeable advance of lay opinion towards a recognition of the benefit of full investigation before operations for chronic maladies. The time, trouble, and expense involved were all well spent in the accurate guidance obtained and the possible avoidance of an unnecessary or a purely experimental operation.

If an accurate diagnosis was to be arrived at, full use must be made of the accessory or special methods of diagnosis. Some of these were simple and capable of almost universal application; others required special training, as the Wassermann test. Exploratory operations on the urinary tract must now never be considered until cystoscopic examination, catheterisation of the ureters, and pyelography had all been employed. Estimation of renal efficiency was of great value in sifting out the safe from the hazardous surgical risks, and the estimation of blood-urea was now becoming practically routine before the operation of prostatectomy. The use of the basal metabolism test now enabled us not only to diagnose when cardiac symptoms were due to thyroid hyperactivity, but also whether the nervous state of the patient was merely neurasthenic, or is due to poisoning by thyroxin. It was also a valuable guide as to the nature and extent of operative interference which the patient would stand with safety. The faint trace of jaundice, only with difficulty detected in the skin and eye, which accompanied the early dyspeptic attacks associated with cholelithiasis, was readily shown by a simple blood test. If 5 c.cm. of blood were drawn into a syringe containing 1 c.cm. of sodium citrate solution to prevent coagulation, the mixture centrifuged and the serum pipetted off, the latter would give with nitric acid the fine play of colours familiar in the test for bile in the urine. This test was frequently positive when no jaundice was detectable, and was valuable evidence of slight biliary obstruction. The duodenal tube was a simple and fascinating method of investigating the rate and nature of the biliary discharge. Mr. Wilkie dealt at some length with the uses of radiology but deplored the tendency to rely on such evidence in opposition to clinical findings.

MIDLAND MEDICAL SOCIETY.

Exhibition of Cases and Specimens.

A MEETING of this Society was held in the Medical Institute, Birmingham, on Feb. 14th. Dr. C. E. PURSLOW, the President, took the chair.

Dr. G. H. MELSON showed a man who had complained of severe pain in the left side for several months. This man had been seen by several surgeons and physicians without a diagnosis being made. X ray examination was negative. The pain was eventually found to be due to a loose costal cartilage on the ninth rib, which was removed, and a complete cure resulted. This case was discussed by Dr. WARDEN BRIGGS and Dr. O. J. KAUFFMANN.

Dr. LEONARD PARSONS described a similar case following an accident, in which the fourth costal cartilage was separated from its rib, causing severe paroxysmal pain. This case recovered without operation.

Dr. PARSONS showed a case of "Pink Disease." He gave a short résumé of the literature of the disease, and stated that he had seen six cases. All the cases had suffered from the condition for many weeks, but previous to the onset of the disease had been well nourished and healthy children. The out-standing symptoms in this series of cases were: (1) The presence of a rash varying in degree and character but always accompanied by intense itching; (2) red, swollen, and cold feet and hands, showing desquamation; (3) striking mental changes, the patient often presenting a picture of the most intense misery; (4) gingivitis and stomatitis with falling out of the teeth; (5) a varying degree of hypotonia and pseudoparesis; (6) the frequent occurrence of respiratory disorders; (7) the liability to sudden death.

Dr. KAUFFMANN showed the organs from a case of lymphadenoma. Blood films and microscopic sections from the same case were shown on the epidiascope.

Dr. J. G. EMANUEL read a paper entitled the Treatment of Auricular Fibrillation by Quinidine Sulphate.

Reviews and Notices of Books.

DISEASES OF THE SKIN.

A Manual for Students and Practitioners. By ROBERT W. MACKENNA, M.D., B.Ch. Edin., Hon. Dermatologist, Royal Infirmary, Liverpool. London: Baillière, Tindall and Cox. 1923. Pp. 451. 21*s*.

THERE are few subjects among the special branches of medicine so well served in the matter of text-books as dermatology, and yet, with the exception, perhaps, of neurology, there is none which appears to offer more difficulties to the average student, nor of which the general physician or surgeon is more frequently ignorant. Diseases of the skin have been regarded in the past as something apart, the poor relation or, as Dr. A. Whitfield puts it, the Cinderella of the special medical sciences; we suspect that the real reason is not, as some maintain, that the nomenclature is so complex and unscientific, but that an "eye" for skins is at least as rare as an "ear" for music. The lines, however, along which dermatological research is now being directed are tending to bring the subject more and more into direct relationship with general physiology and pathology, and it is as necessary for the physician of to-day to have some knowledge of the ætiology of the more important diseases of the skin as it is for the dermatologist to keep abreast of the advances that are being made in general medicine.

Dr. MacKenna has written a book which in many ways is quite different from any other text-book of skin diseases that has yet appeared either in this country or abroad. It is pleasantly free from the hackneyed and stereotyped text-book "form," and the author has arranged the subject-matter in a manner essentially logical and practical. After two short but adequate chapters on the anatomy and physiology of the skin, the morphology of its different lesions, and the clinical examination and general treatment of its diseases, he wisely deals first with the pyogenic infections, so that the student at the outset makes the acquaintance of eruptions which are not only very common, but of which the cause is known with certainty. No account is given of multiple abscesses of young children, or of the "*hidrosadénites*" of the axilla, both of which conditions are sufficiently common to merit inclusion. The chapter on tuberculosis of the skin is good and well illustrated. In the section on the treatment of lupus vulgaris, the author states that, while disappointed with tuberculin, he is obtaining promising results with injections of sodium morrhuate, and he speaks highly of Dr. H. G. Adamson's method of local painting with the liquid acid nitrate of mercury, the value of which has been recognised by most English dermatologists. Syphilis is dealt with adequately and clearly, and the tabulation of the differential diagnostic points between various syphilitic lesions, and the eruptions they imitate should be of value to students. We think, however, that the course of intravenous injections of neosalvarsan recommended is dangerous even in healthy subjects, namely, 10 injections—0·45 g., 0·6 g., and six 0·9 g. at weekly intervals, and two more 0·9 g. after an interval of 14 days—i.e., a total of 8·25 g. over a period of 12 weeks. The risk of damage to the liver with such an intensive course is surely considerable, and we are not convinced that any advantage is gained over the method advocated by Dr. Whitfield, whereby three full doses of 0·9 g. are given at intervals of three weeks, and, if necessary, repeated according to the indications of the W.R.

In a chapter on "Skin Diseases due to a Filter-passing Virus," Dr. MacKenna includes molluscum contagiosum, verruca vulgaris and plana, and the venereal wart. The work of Kingery and Wile would seem to have established that molluscum is caused by a filter-passing organism, and the same is probably true of the common and plane wart, but the investigations

of Civatte and Favre suggest that the venereal wart is due to the spirillum which is constantly found in them. The account of the erythemata is preceded by a chapter on focal infections and protein sensitisation, and a brief description is given of the method of performing the cutaneous tests with foreign proteins. In discussing the ætiology of erythema nodosum, the author rightly, we think, rejects the theory that it may sometimes be of tuberculous origin, and favours the view that a streptococcal infection is the cause: he also points out that one attack does not, as some have asserted, confer immunity, although recurrences are not frequent. Lupus erythematosus he includes among the erythemata, and adduces convincing arguments against it being considered as a tuberculide: "No disease," he says, "in the whole range of dermatology has a more unfortunate name than that generally known as lupus erythematosus." In the brief description that is given of keratodermia blenorrhagica, it is suggested that some of the cases reported have really been syphilitic or psoriatic hyperkeratosis in a person suffering from gonorrhœa. In view of the disappointing results that many have experienced with collosol manganese, it is interesting to note that Dr. MacKenna is enthusiastic about it in the treatment of suppurative acne. He prefers the freshly prepared solution, obtained by mixing equal parts of No. 1 and No. 2 solutions, and he gives six injections subcutaneously at intervals of four days in doses increasing from 0·5 c.cm. to 2 c.cm., the course being repeated at the end of a fortnight if necessary. In the section on malignant tumours of the skin, no mention is made of the very superficial, usually multiple form of basal-celled carcinoma that is apt to be wrongly diagnosed as psoriasis or seborrhœic dermatitis; and in the description of Paget's disease of the nipple, the author accepts Sampson Handley's view that it is always secondary to malignancy in the breast. This will not be universally accepted among dermatologists.

It is clear the book has been written largely from the author's personal experience, and it is therefore easy and attractive to read. Although there are no coloured plates, the illustrative photographs are well reproduced. Dr. MacKenna deserves great credit for having provided the profession with a clear exposition of modern dermatological teaching, and his book should prove very popular.

DENTAL RADIOLOGY.

By CHRISTOPHER KEMPSTER, M.R.C.S., L.R.C.P. Lond., Medical Officer in Charge, X Ray Department, Hampstead General and North-West London Hospital and Manor House Hospital, Golders Green. London: The Scientific Press, Ltd. 1922. Pp. 184. 10*s.* 6*d.*

THIS little book is of handy size and contains much useful information; it is not, however, very well balanced, and might well have been written with rather more care. The 19 pages devoted to description of X ray apparatus, including five from Codd's "Induction Coil Design," which form the first chapter, seem to us excessive in a work on dental radiology. It is stated that a dental radiologist would require an apparatus capable of giving 10 or 15 milliampères for 8 or 10 seconds. As dentists invariably use films, such an exposure appears to be quite unnecessarily long. It is also stated that the Rhumkorff coil is a "step up transformer," but this is hardly correct. The term "transformer" should only be used when referring to alternating current. The author states that there are two kinds of interrupters in general use, the mercury and electrolytic, but under the heading of the former only one kind is described, that of a jet brake, and only one form thereof, the Sanax type. He concludes this chapter with the opinion that an interrupterless transformer and Coolidge tube is the best combination for X ray work. Several makes of this type are on the market and appear to be satisfactory.

The second chapter, on X ray tubes, should prove useful to beginners in dental radiology. With the statement that tubes should be selected for the particular work to be done we cordially agree, also with Dr. Kempster's experience that tubes all vary and that each has a normal current at which it will work best. This point, which refers to "gas tubes," is well worth noting. The technique of film radiography described in Chapter III. will strike many as slow and cumbersome, and unsuited for work on children. Illustrations of positions for extra-oral radiography with large plates are given, showing the patient merely resting the face against the plate cassette, without any means whatever for steadying the head. This method may succeed in a few cases, but it is likely to fail in the large majority. Again, the method shown for radiographing the maxillary antrums, where the patient merely balances the head on the plate cassette by the nose and chin, does not appeal to us as practicable. Chapter IV. deals with the development and fixing of the X ray film or plate. Dr. Kempster devotes 80 pages to the fifth chapter, entitled Interpretation of Dental Radiographs. Unfortunately this chapter is mainly filled with general matter on the uses and advantages of X rays not relevant to interpretation of results. The illustrations of the film radiographs are, on the whole, well reproduced; no extra-oral radiographs are shown. Chapter VI. is devoted to stereoscopy and localisation; with the remarks on the value of extra-oral stereoscopy we entirely agree. As to the dangers of X rays, discussed in a final chapter, the author states that there is no fear of ill-effect on the dental patient; disasters are certainly rare, but it must be admitted that in a very small percentage of cases, perhaps 1 in 10,000, damage may occur if no protective measures are adopted.

A readable and useful little book; we have indicated the places where in a future edition reservations or alterations would be advisable.

CURE OF THE DEAF BY ELECTRO-AERATION.

By J. L. AYMARD. M.R.C.S., L.R.C.P. Lond., late Aural Specialist, Queen's Hospital, Sidcup. Johannesburg: Argus Printing and Publishing Co. 1922. Pp. 71.

THIS pamphlet, in spite of the confusion caused by excessive vituperation of the generally recognised methods of treatment, contains a sufficient description of Mr. Aymard's method to enable other workers to try it; to this end a chapter by Major Pelling on electrolysis from its physical aspect is helpful. The principal form of treatment on which Mr. Aymard bases his claims, and which he calls "electro-aeration," is electrolysis of the nasal passages and nasopharynx by means of a platinum electrode embedded in a tampon of cotton-wool saturated with a solution of common salt and magnesium sulphate, 5 gr. of each to the ounce of water; this is attached to the positive pole of the current, the negative electrode is placed in one hand, and a current of 5 milliampères is passed for 20 minutes or longer; his routine is three treatments a week as long as necessary. The tampon containing a platinum wire is passed along the inferior turbinal of each nostril, and packed well into the nasopharynx, and it is important that the plugs shall meet behind the septum. The beneficial effect is presumably due to the nascent oxygen evolved at the anode. Mr. Aymard appears to claim that inflammatory conditions of the nasal sinuses are curable by this means, but it is difficult to believe that inflammation within, say, the frontal sinus can be influenced by the action of an electrode lying along the floor of the nose; for the successful electrolysis of the sinuses it has so far been considered necessary to place the electrode within the affected cavity. Supplementary methods include electrolysis of the ear with the positive electrode in the auditory meatus, the high-frequency current, and zinc ionisation in aural suppuration; at the same time Mr. Aymard

makes a point of removing tonsils and adenoids, and of resecting deflections of the septum; some of his results may indeed be due to these measures. Mr. Aymard states that he has seen, not a few, but hundreds of cases quite erroneously diagnosed as nerve-deafness and otosclerosis; and he holds the unusual view that aural polypi are an advantage in chronic suppuration in that they facilitate drainage. He does not make use of the tuning-fork in the examination of his patients. There is no doubt that the treatment of some cases of chronic catarrh and catarrhal deafness is in an unsatisfactory position, and that a method of treatment which proved to be more successful would be warmly welcomed.

L'ORTHOPÉDIE EN CLIENTÈLE.

Par J. PRIVAT. Paris: A. Maloine et Fils. 1923. With 595 figures in the text. Pp. 817. Fr.25.

THIS book is intended to enable the general practitioner to diagnose and treat the usual orthopædic lesions on conservative lines. The use of plaster-of-Paris as employed by Dr. Calot, of Berck-sur-Mer, plays an important part in the work, and little is said of other kinds of appliances or methods of treatment. Operations, except aspirations and injections of abscesses, are barely referred to. As was to be expected of a surgeon who has studied in the Marine Hospital of Berck, surgical tuberculosis bulks largely in this volume, and the directions given are adequate to enable the practitioner to carry out the open-air treatment with which Alton, Oswestry, and other hospitals have familiarised us. We doubt, however, whether as good results can be expected in private practice as in a special open-air hospital, and the general practitioner who has the interests of his patients at heart will try and obtain admission for them to such an institution.

The section on deformities due to causes other than tuberculous are less authoritative and less practical, with the sole exception of the notes on congenital dislocation of the hip. Here Dr. Privat makes a timely claim of priority for Pravaz, of Lyons, who in the middle of the nineteenth century cured a number of cases of this affection by manipulative methods which resemble those successfully used at the present time, although he had not the advantage of using plaster-of-Paris. Having in mind the fact that this book has no pretence to be a complete handbook of orthopædic surgery, and ignores certain departments of the specialty, we can recommend it as a useful guide to practical treatment, and especially to the technique of plaster-of-Paris appliances. It is profusely and well illustrated.

GALEN ON THE NATURAL FACULTIES.

The Loeb Classical Library. With an English translation by ARTHUR JOHN BROCK, M.D. Edin. London: William Heinemann. Pp. 339. 10*s*.

ALTHOUGH this book is dated 1916, we have only just received it, so that any delay in the review is not to be laid at our door. The admirable publications of the Loeb Classical Library are, or should be, known to every one who cares for learning, and this volume is of especial interest to the medical profession. Galen ranked second only to Hippocrates in ancient medicine, although all through the Middle Ages Galen's fame far outshone that of his acknowledged master. The treatise now before us forms, to use Dr. Brock's words in his introduction, "an excellent prelude to the study of his larger and more specialised works." It deals mainly with physiology in the modern sense, together with a certain amount of physics. The term *Physis* is used by Galen to express the power which governs the living organism, and it is the province of physiology to deal with the faculties of this power. The living organism is one, a unity, and all its parts "can only be understood and dealt with in relation to this principle of unity." Hippocrates, of course, had maintained this principle, and so had Plato, who says in his dialogue Charmides, quoting a Thracian physician, that "the part can never be well unless the whole is well."

Much of the treatise "On the Natural Faculties" is taken up with exposing and confuting the errors of Asclepiades and Erasistratus, and in so doing Galen shows a wonderfully accurate knowledge of physiology for his time. He knew that the arteries, or some of them, contained blood, and was also aware of the anastomoses between the arteries and the veins. He also knew that the blood got from the right side of the heart to the left, but he accounted for this by imagining a communication through the septum from one ventricle to the other. Dr. Brock gives us a short account of Galen's life, but we think that on p. 18 he is hardly fair in his statement about his conduct when Marcus Aurelius asked him to go to the front with him in the Marcomannic campaign. Galen certainly did refuse to go to the fighting front, but he did go to Aquileia where the troops mobilised, and worked there for some time trying to combat the ravages of the plague. He went in the year 168 and returned to Rome in 170 to look after the youthful Commodus, who had been entrusted to his care by the Emperor. As events turned out, it would have been better for the Roman world and for the credit of humanity in general if the plague had carried off Commodus, but that he turned out the baleful creature he eventually became was not the fault of Galen.

The medical profession owes a debt of gratitude to the editors of the Loeb Classical Library for having given to it in English such a valuable example of Galen's works. If they should choose to give us another of his treatises we would suggest the selection of either the "De Usu Partium" or the "Methodus Medendi."

JOURNALS.

ANNALES D'HYGIÈNE.—A new series of the *Annales d'hygiène publique et de médecine légale* begins in the issue of January of the present year under the title of *Annales d'hygiène publique, industrielle et sociale*, which will be welcomed by all hygienists who have looked to the *Annales d'hygiène* for light and leading in the past. Its history dates back to the year 1829, and during the long period of its history the journal, under the editorship of Brouardel and Thoinot, has represented all that is best in French hygiene. A division of forces has now become necessary, and in future the *Annales de médecine légale* will appear separately under the direction of MM. Bathagard and Martin. The first number of the new series opens with an excellent paper on social hygiene by M. Eugene Montet; in this article are summarised some of the chief efforts now being made for improving French social conditions. The struggle against alcoholism is steadily gaining force in France. The efforts of the late Dr. Jacques Bertillon and others are beginning to bear fruit against this "chief of social diseases"; in a striking extract from M. Jean Finot's work "Sa Majesté l'alcool" some of the chief results of alcoholic excess in France are summarised. The rôle of social hygiene is not merely to diminish the ravages of social diseases, such as syphilis and alcoholism, but also to raise the standard of individual efficiency, and in this connexion M. Montet describes a noteworthy attempt to secure periodical medical examinations, on lines similar to those which have been popularised in the United States.

TROPICAL DISEASES BULLETIN. Vol. XX. No. 2. February, 1923.—The February number of the Bulletin contains the second part of a review of medical helminthology by R. T. Leiper. Kala-azar is reviewed in a series of 38 references by C. M. Wenyon, amœbiasis and dysentery (51 papers) by P. H. Manson-Bahr. C. M. Wenyon again reviews relapsing fever, yellow fever, and other spirochætoses, and Leonard Rogers the most important recent papers on leprosy. There are the usual book reviews and notices.

THE LANCET.

LONDON: SATURDAY, MARCH 10, 1923.

DISEASE AS AN ACCIDENT OF EMPLOYMENT.

THOUGH medicine and law do not always see eye to eye, each has occasional opportunities to watch the other's operations with a certain respectful and sympathetic curiosity. Medicine has one such opportunity in an illuminating article in the current *Law Quarterly Review* wherein is revealed the law's attitude to disease in relation to workmen's compensation. As is well known, Parliament in 1906 made special provision for compensating sufferers from certain scheduled diseases such as lead, mercury, or phosphorus poisoning, to which list the Home Office has added miners' nystagmus, writers' cramp, twisters' cramp, and other ailments. But the original and principal Workmen's Compensation Act of 1897 was silent as to disease. The free insurance which it offered to the British workman was in respect of "personal injury by accident arising out of and in the course of the employment." Parliament had tried to use clear and simple words, but it thereby imposed upon the law courts the task of saying how much those words would cover. All diseases may be personal injuries, but is a disease an accident?

Judges interpreted accident as "injury by some fortuitous and external event"; some element of bad luck and unexpectedness had, it seemed, to be present. It was easy enough to decide that the rupture of muscles or organs through over-exertion is an accident. But when the workman began to claim compensation for disease, it was hard to see how far such claims might go. The first big battle was fought over a wool-sorter who contracted anthrax. This was held to be an accident because the "accidental alighting of a bacillus" in the man's eye was comparable to the squirting of molten metal or of some poisonous liquid. It was, said Lord MACNAGHTEN, an accident that the noxious bacillus happened to be in that particular bit of wool, an accident that it was carried upwards instead of downwards, an accident that it struck the worker in a vulnerable spot and thereby entered his system. It was, in fact, a chapter of accidents. Then came a fresh conundrum. A miner, owing to the breakdown of a pump, had to stand in icy cold water and caught his death of pneumonia. This was held a proper case for compensation. "Extreme and exceptional exposure to cold and damp" amounted to accident. At the other extreme a stoker on the *Majestic*, who died of heatstroke two hours after exposure to great heat, was held to come within the Act. But, for fear the riddle should seem too easy, the law declined to give the same remedy to another stoker who, being stronger, took longer to kill. In the latter case the man was employed in the stokehold in the Red Sea and suffered for several days before he died instead of merely two hours. The legal distinction lay in the idea that extreme heat is a normal and well-known risk of the Red Sea and therefore not an accident. The same reason was fatal to the claim of a workman who was alleged to have contracted enteritis by inhaling sewer-gas. It was argued on his behalf that it was an accident that the poison bacillus happened to attack him, but the court said sewer-gas was not unexpected in a sewer, and so the claim failed. In a similar case a gardener was ordered to open up a cesspool. He died of disease asserted to have been contracted in that operation, but his widow failed because she could not show how he was infected. A fever hospital attendant who caught scarlet fever was equally unlucky in being unable to prove to the court's satisfaction the origin of his illness. Claims arising from paralysis due to lead poisoning and claims due to "beat hand" and "beat knee" have also failed under the 1897 Act, though such cases can come within the Act of 1906. These afflictions, being the consequence of a slow and gradual process, are not to be described as accidents. Angina pectoris and apoplexy claims have failed because, though the attacks came on during employment, there was no proof of accident—no evidence of exceptional strain at a given moment. Not to prolong the catalogue, there is, lastly, the case of a Scottish workman who, working amongst artificial manures, contracted blood poisoning by the infection of a scratch on his leg. Here the judges differed acutely. The Court of Session said his claim must fail because the time and circumstances of the "accident" (the scratch and the infection) were obscure. The House of Lords reversed this decision, saying that it was enough if the infection resulted from contact at some moment during the course of the employment.

Is it unreasonable to suggest that these legal subtleties and this incessant litigation are a sad waste of time and money? Casuistical and not always very scientific observation about the "alighting of a bacillus" at one time or another are cold comfort to a workman's widow. Mr. MARCUS DODS, the learned author of the article from which we have quoted, declares frankly that the Act of 1897 has broken down and ought to be replaced by a totally new scheme of general health insurance. The same opinion is held by others and especially by the political representatives of the workman who want to see his compensation more generously granted. Mr. J. L. COHEN, in a useful little book on Workmen's Compensation in Great Britain,[1] seems to favour a brand-new centralised, compulsory, non-contributory scheme of State insurance embracing all persons earning less than £350 a year. The advocates of such a scheme are impressed by the large working costs of the insurance companies to whom the employers at present have recourse. It is stated that the employer has to pay £8 for every £3 given in compensation to workmen. If it is shown that the administrative expenses of these companies working in competition are 30 or 40 per cent. while the expenses of a State insurance monopoly would not be more than 5 or 10 per cent., it is naturally argued that the State system would save large sums of which the workman might have the benefit. Mr. COHEN puts the total cost to the country of accidents and industrial diseases at from 36 to 48 million pounds a year—a colossal if somewhat elastic figure. If, with the aid of such influences as the "safety first" movement, industry can lessen its rate of accidents, if medical science can cope with industrial diseases and with the more abstract problems of fatigue, lighting, heat, and ventilation, if the law can be simplified and generalised so as to save the immense sums now spent on litigation, and if insurance can be cheapened, there should be sufficient margin to finance a system of workmen's compensation which would be something better than a legal gamble and which would cover

[1] London. Post Magazine, 1923. Pp. 232. 6s.

every kind of accident or disease. The Chancellor of the Exchequer pointed out recently that an "all-in" method of insurance would present enormous difficulties, administrative, political, and economic. Nevertheless, Great Britain may some day decide to unify and coördinate the whole of its social insurance, health insurance, unemployment insurance, workmen's compensation, employers' liability, old age pensions and all. When that day comes, the medical profession must be ready to take its part in the framing of the scheme as well as in the operation of the machinery.

DIRECT INFECTION IN ENCEPHALITIS LETHARGICA.

THE account of an outbreak of encephalitis lethargica in a school at Radway, Warwickshire, which we published in a recent issue,[1] is worthy of close study by those who may be called upon to diagnose this disease. Dr. L. L. FYFE has chronicled many interesting and important details concerning the symptomatology and clinical course of the disease as manifested in this instance by young children. The events at this small school, however, are significant in a wider sense, for they shed further light on the natural history of encephalitis lethargica and help to make more clear the infectious nature of this epidemic disease. As formerly, with acute poliomyelitis and cerebro-spinal fever, so now with encephalitis lethargica, the personal incidence of the disease seems at first sight to be a matter of mere caprice on the part of the virus, and well-marked cases of the malady crop up in apparently sporadic fashion throughout the country. There still remains a strong impression that, even when the disease is comparatively prevalent and widespread, the individual cases occur as discrete and unconnected events. In 1921 MACNALTY [2] recounted instances where multiple cases of infection had occurred, and later further instances of case-grouping were brought to light in this and other countries. In a severe wave of encephalitis lethargica that ingulfed certain villages in Lapland during February, 1921, the morbidity rate [3] was unprecedented and varied from 7·1 to 45·0 per cent.; whole families were involved, and side by side with acute typical cases were others in which the disease showed itself in various degrees of comparative mildness.

In this country the "Derby outbreak" of August, 1919, investigated and described by MACNALTY,[4] in addition to demonstrating the infectious potentialities of the disease, provided the occasion for establishing on bacteriological grounds some new facts concerning the virus itself. It will be recalled that this explosive outbreak occurred in a home for girls, and out of a total community of 22 persons 12 individuals were attacked within a fortnight. The first two cases were probably infected from a common source—latent in the home itself or encountered outside—but it is likely that direct contagion accounted for the majority of cases. As an instance of infection clinically affecting many members of an institution the experience at Derby remained unique until the occurrence of the small outbreak recorded by Dr. FYFE; at Derby the disease, with dramatic abruptness, fell upon a secluded community of young women (the majority of whom belonged to the most vulnerable age-period), quickly involved over half of the inmates, and caused the death of five of those affected. Of the 32 scholars at Radway a smaller proportion were infected; the invasion of the disease was insidious and for some time unrecognised by reason of the comparatively long interval between the first and subsequent cases and of the relative mildness of the clinical symptoms. The school had but lately reassembled after the summer holidays when, on Sept. 15th, one of the older girls was found to be fast asleep at her desk; with some difficulty she was roused sufficiently to be sent home, where she remained for a long week-end and then resumed her regular attendance at school although subject to daily bouts of somnolence and headache. On Oct. 9th the senior girl in the school, who occupied a seat immediately in front of the first patient, was overcome in a similar way, and on the 11th and 13th respectively two more girls were attacked. Alone among her school-mates, the first girl had spent part of the previous holidays away from the village; it would seem likely that she acquired her infection while on a visit to a neighbouring large city, and that the last three children to be affected derived their infection either directly or in a mediate manner from her. This would mean an average incubation period of 23 days. On the other hand, if the second case passed on the infection to one or both of the others the incubation periods would be considerably shorter and more in accord with events in the Derby outbreak. At any rate, it is difficult to avoid the conclusion that personal contagion was the method of spread here as it probably was in an instance reported by REECE,[5] where a nurse contracted the disease while attending a patient who was suffering from encephalitis lethargica and with whom she had not previously been in contact. Moreover, the instances of encephalitis lethargica in babies, born while their mothers were suffering from the disease (four such instances have been recorded in this country), surely must dispel any doubt as to the contagiousness of the malady.

Investigation failed to discover any obvious focus of infection with which the first patient at Radway school had come in contact during her holiday visits; but, it is noteworthy that, in at least three instances, where there was a familial grouping of cases in isolated districts, the first patient to be attacked had recently been visiting a populous centre. Again, the comparative frequency with which the more striking examples of multiple infection are referable to isolated districts or secluded communities is one of the most significant features in the epidemiology of encephalitis lethargica. It would almost seem as if the dwellers in populous centres had, through constant contact with infection, acquired an immunity to the virus which has not been possible for smaller communities living in comparative seclusion. When, however, a susceptible member of such a community mixes with the world at large he may acquire the virus and on returning infect one or more susceptible persons in his home or place of work. The researches of LEVADITI, HARVIER, and NICOLAU, indeed, appear to show (as suspected for some time on clinical and epidemiological grounds) that the virus of encephalitis lethargica is widespread and exists in more than one form; it is perhaps sufficient for the clinician and the epidemiologist to know that there are "carriers" who harbour the virus in virulent form and that, in an attenuated degree, the poison lurks in the saliva of healthy

[1] THE LANCET, Feb. 24th, 1923, p. 379.
[2] Encephalitis Lethargica as an Epidemic Disease. International Journal of Public Health, May to June, 1921, ii., No. 3.
[3] Kling and Liljenquist: Hygeia, Stockholm, 1921, lxxxiii., 566–72.
[4] Report on Outbreak of Encephalitis Lethargica in a Girls' Home. Ann. Rep., Chief Medical Officer, Ministry of Health, 1919–20, App. VII.
[5] Encephalitis Lethargica. A. Prevalence in 1918–19. Report Medical Department of the L.G.B. for 1918–19, p. 71.

individuals. Another lesson may well be learned from the little outbreak. It is the custom in many a medical inquiry to search for clues among the denser areas of population, to use the weight of mass statistics, and to avail ourselves of the technical facilities and professional experience which are to be found in all important centres. But in the case of encephalitis lethargica, and some kindred diseases, a more fruitful field for inquiry will often be found in the less populous districts where the threads of an inquiry can be more easily caught up and the knots more quickly unravelled. Not in cities, nor in hospitals, then, but in such quiet rural retreats as Radway village may be found the solution to some of our epidemiological problems, and in such quests the country practitioner, the village schoolmistress, and the health visitor can render invaluable public service. Indeed, they have done so.

ADVANCES IN CANCER RESEARCH.

EXPERIMENTAL cancer research is at the present moment perhaps one of the most active departments of medicine. The two last volumes of the Proceedings of the Japanese Pathological Society[1] contain out of less than 200 papers over 30 papers on experimental cancer research. Last year an informal international meeting of a number of leading investigators in experimental cancer research was held in Amsterdam under the presidency of Prof. ROTGANS, of Amsterdam, which led to the formation of the Leeuwenhoek Vereeniging, a society for the study of malignant tumours. The first meeting, which was held without ostentatious publicity last October, dealt exclusively with the subject of tar cancer. The Proceedings[2] now published as an unpretentious volume of 53 pages, represent one of the most important publications which have as yet appeared on the subject of cancer, since it summarises investigations which are proceeding in the different leading laboratories. Owing to the distance, Prof. YAMAGIWA, of Tokio, and Dr. W. H. WOGLOM, of New York, who had been invited, were prevented from being present and reporting on their investigations. The slim volume contains contributions by Prof. J. FIBIGER, of Copenhagen, the father of this line of cancer research, and his assistant, F. BANG; by Dr. H. T. DEELMAN and Dr. WATERMAN, of Amsterdam; Dr. J. A. MURRAY and Dr. A. LEITCH, of London; G. ROUSSY, R. LEROUX, and ED. PEYRE, of Paris; B. LIPSCHUTZ, of Vienna; R. BIERICH, of Hamburg; BR. BLOCH, of Zurich; and A. TEUTSCHLANDER, of Heidelberg.

In reading through these reports one cannot help being struck by the significant advance which has taken place during the last four years in our knowledge of the ætiology of cancer. The same impression is gained from reading a recent paper by Prof. FIBIGER,[3] which gives an admirable summary of the recent work on the experimental production of cancer. Some of the most fundamental problems, the solution of which has defied the efforts of clinicians and morbid histologists for half a century, yielded their secrets as soon as the experimental method could be applied. In fact, it may be doubted whether the problem of the ætiology of cancer could ever have been solved if the clinical study of the disease in man had been our only mode of attack, for the experiments with tar have shown that a tumour may develop long after the irritant ceased to act. From this discovery of a long "period of latency" which in man may extend over years, a number of important conclusions follow. Thus cells may have acquired the tendency to develop later malignant properties before there is an external indication of this change in their morphological appearances. Again, the characteristic age-incidence of cancer is not due to the fact that the cells of old animals are more prone to cancerous degeneration than the cells of young animals. Experiment shows that they are not; the correct explanation is that the irritant must act over a considerable period, to which has to be added the period of latency. There is further the important demonstration that tumours which are apparently benign may develop into malignant new growths, and that a trauma which by itself is incapable of producing cancer will greatly accelerate the development of cancer following upon the application of a suitable irritant. This last fact throws light on the occurrence in man of malignant new growths after a trauma and at the site of the trauma. If there is a causal relationship it is probably that the trauma shortened the period of latency. Attempts to immunise mice against the development of cancer have so far failed. The methods which will produce a resistance against the homologous transplantation of tumours do not confer resistance against the development of cancer any more than they confer resistance against the autologous transplantation of tumours. Lastly, there is the significant fact that mice which have once developed a cancer after the application of tar, and have been cured by operation, do not react to the subsequent application of tar by the development of a second cancer. This fact explains the comparative rarity of the occurrence of multiple tumours in man, and may lead to other important developments. At present there is at any rate some consolation in the reflection that, probably, we can have cancer but once.

We have only indicated here some of the definitely ascertained results concerning the ætiology of cancer which have been obtained. But it is clear that since malignant disease can be produced experimentally therapeutic and prophylactic measures can now be placed on a controlled experimental basis. The work is necessarily slow and requires a good deal of patience. It takes months in a mouse, and over a year in a rabbit, even to produce a new growth, and the mortality is high. This may account for the curious lack of appreciation of the significance of this work outside the narrow circle of those who are engaged on it, and for the failure of the wider medical public to realise that, so far as cancer research is concerned, we live in stirring times.

[1] Verhandlungen der Japanischen Pathologischen Gesellschaft, 10 Tagung, 1920; Transactions of the Japanese Pathological Society, vol. xi., 1921, published by the Pathological Institute of the Imperial University, Tokio.

[2] Leeuwenhoek Vereeniging, vol. i., J. M. de Bassy, Amsterdam, 1922.

[3] Acta Chirurgica Scandinavica, vol. lv., 1922, p. 343.

PUBLIC HEALTH QUESTIONS IN BELFAST. — The Belfast City Council is promoting a Bill in the Parliament of Northern Ireland to secure wider powers for dealing with the food-supply of the city. To consider these proposals a joint meeting of the Ulster Medical Society and the Ulster Branch of the British Medical Association was held in the Medical Institute, Belfast, on March 1st, with Prof. J. A. Lindsay in the chair. A resolution, proposed by Dr. D. Gray, seconded by Dr. J. S. Morrow, and supported by various members, was passed unanimously: "That every public health authority should have the right to examine and inspect the source of supply of any article of food offered for sale or consumed within its area."

Annotations.

"Ne quid nimis."

THE OPIUM CONVENTION AND THE LEAGUE OF NATIONS.

THE progress made by the League of Nations in putting into effective operation the International Opium Convention, which was signed at the Hague 11 years ago, has not been rapid. The objective of the Convention was "to bring about the gradual suppression of the abuse of opium, morphine, and cocaine, as also of the drugs prepared or derived from these substances, which give rise or might give rise to similar abuses." To bring about coöperation to this end by more than 50 Powers, some of which are not yet included within the League of Nations, is necessarily a complicated task, and demands both time and patience. It is satisfactory to learn that the United States of America and Germany, although standing outside the League, are lending assistance and advice in this humanitarian work. It is, moreover, rumoured that Turkey is "favourably considering adhesion to the Opium Convention," and Persia, which made serious reservations on signing the treaty, is now likely to ratify *sans phrase*. As these two latter countries are large producers of opium, their loyal coöperation should be particularly welcome.

We understand that the question as to what constitutes the "legitimate" use of opium and of the other drugs has been engaging the attention of the Advisory Committee of the League, and that a joint subcommittee formed from the Health and Opium Committees has expressed the opinion that "medical use should be considered the only legitimate use of opium and other dangerous drugs," and that "in the opinion of the doctors, the use of opium as a stimulant could not be considered legitimate even in tropical countries." These opinions appear to be in conflict with the views still held by the India Office, which, in a recent publication entitled "The Truth about Indian Opium," reiterated as "unchallenged" the findings of the Royal Commission of 1895 to the effect that opium was to be regarded as a valuable domestic medicine, as useful in fever and prophylactic against malaria, as a stimulant for the purpose of "resisting fatigue," and even as a "specific against old age." The Royal Commission of 1895 reported that "opium is used as a stimulant, and it is also largely consumed in India for the mitigation of suffering and the prevention or cure of disease. It is the universal household remedy. It is extensively administered to infants, and the practice does not appear to any appreciable extent injurious." The Commission did not condemn the export of Indian opium to China and elsewhere; moreover, they found that "in the present circumstances the revenue derived from opium is indispensable for carrying on with efficiency the Government of India."

It is to say the least doubtful whether the findings of the Commission of 1895 can be maintained to-day. In 1906 the House of Commons with unanimity condemned the Indo-Chinese opium trade as "morally indefensible," and in 1917 it was brought to an end. Lord Morley, when Secretary of State for India, declared that the Commission of 1895 had "somehow or other failed to satisfy public opinion." The Shanghai Commission of 1909, and the three Hague Conferences of 1911–12, 1913, and 1914, have served to show the world-wide abuse of these "drugs of addiction," and the need not only for national but for international legislative and administrative control to limit their production and distribution to medical and legitimate purposes. Medical opinion generally will probably now be found to range itself alongside the advice given to the League of Nations to the effect that the only legitimate use is the medical use, and to doubt the virtues, even in tropical countries, ascribed to opium by the Commissioners of 1895. Meanwhile we learn from a recent answer in the House of Commons[1] that in the year 1920, 322,464 oz. of British-made morphia were exported from this country, or about nine tons, to which must be added exports by parcel post and exports of preparations containing morphia. The contention that much of this exported morphia is used for illicit purposes will probably be unchallenged.

CENSUS FIGURES FOR LONDON.

THE appearance of Vol. II. of the Census tables (1921) for the County of London is welcome, for there has been over-much delay in issuing these two first of the English Census volumes. There is no explanatory statement of the main inferences from the tables, which will appear in a later volume, and the searcher after truth must therefore laboriously work out his own conclusions. But even so, the statistician can find much of interest in the masses of figures. Thus we learn that of the total population of London, nearly 20 per cent. are under 12 years of age; and that of the total population over 13 per cent. are unoccupied, including retired persons. The largest single-grouped industry is that of transport workers, who numbered 253,000, next to this come commercial and financial workers, of whom there are over 163,000, while metal-workers, numbering over 115,000, come third, and clerks, over 102,000, fourth. The predominance of the financial and mercantile industries of London over manufactures is well shown in these figures. The limited extent to which the population of London is foreign-born is shown by the fact that fewer than 146,000 of its 4½ millions were returned as born in foreign countries, fewer than 42,000 as born in Greater Britain, while in over 30,000 the birth-place was not stated. Nor is the Scottish contingent so large as it is commonly thought to be, for of the total population of London 4,129,934 were born in England and only 49,881 in Scotland. Perhaps the most interesting table in this report is that dealing with dependency, and it is the only table in the volume in which ratios are stated. Among the total number of married men who were enumerated in London in 1921, the average number of living children under 16 years of age per family was 1·26, the highest proportion (2·04) being among families with fathers aged 35–45. This table sheds some light on the subject of net fertility. The number of children per family of younger parents doubtless represent uncompleted families, and the figures in this table need to be supplemented by those given in the Registrar-General's Fertility Report.

THE EVOLUTION OF SANATORIUM TREATMENT.

Two recent reports from widely separated centres afford instructive evidence of the direction in which modern sanatorium treatment is evolving. In the annual report for 1921 of the medical officer of health for Newcastle-upon-Tyne, there is a paper by Dr. C. G. R. Goodwin, medical superintendent of Barrasford Sanatorium. He has come to the conclusion that dispensing with the old austerities of open-air treatment and the discomfort and even misery it provokes in the winter, does not impair the results. Fresh air is a necessity, but bitterly cold air is undesirable and even harmful. With regard to weight, he does not attempt to increase it above the patient's normal weight in health, for excessive fat is promptly lost on discharge, with depressing effects on the patient who imagines he is immediately losing ground. "Rest is by far the most important measure in the treatment of active pulmonary tuberculosis . . . . when it is certain that they are free from fever, they are sent morning and afternoon on walks . . . . When a patient has been on full exercise for a few weeks with general improvement, he is offered a little light work as an alternative to the morning walk. This is to be regarded as a means of varying the monotony rather than as an attempt at

[1] THE LANCET, March 3rd, p. 468.

real work . . . . the basis of treatment is rest, and hard work has no place in this sanatorium's routine, however carefully it might be graduated." In a paper with the heading "The Effect of Six Weeks' Bed Rest Upon Patients Entering Trudeau's Sanatorium," Dr. Lawrason Brown and Dr. Fred H. Heise [1] give an account of their "rest squad." Thinking that intensive bed rest for six weeks might benefit all cases of pulmonary tuberculosis at the onset of treatment, regardless of symptoms, they set aside two cottages for this experiment. Meals were served at the cottages, and the patients were allowed to eat at a common table in their bath robes. At the end of the six weeks the patients were gradually introduced to the ordinary sanatorium routine. The "rest squad" included 161 patients and 629 other patients who underwent the old sanatorium routine served as controls. The "rest" cases had, on the average, one month less treatment than the "no rest" cases. After publishing details, the authors conclude: "While no striking evidence is produced to show the benefit of six weeks' bed rest to cases entering the Trudeau Sanatorium, under the conditions existing relative to selection of cases and time of beginning treatment, the authors nevertheless feel that under more favourable conditions, especially when treatment can be begun immediately upon diagnosis, intensive bed rest will prove of benefit to the patient, although symptoms of definite activity are absent. Surely a much more impressive idea of the seriousness of the disease and of the necessity of proper care is inculcated, and this should, in later days, months, or years, show beneficial results in prevention of relapse."

[1] American Review of Tuberculosis, December, 1922.

A PASTEUR EVENING AT THE ROYAL SOCIETY OF MEDICINE.

IN the medical world, at least, the relations of France and this country could not be more cordial than they are at present. Last year the Académie de Médecine celebrated the centenary of Jenner, and on Feb. 28th the Royal Society of Medicine devoted its social evening to the memory of Pasteur. Sir William Hale-White, the President of the Society, delivered an address on Pasteur in Relation to Medicine, a necessarily brief chronicle of the origin and family life, the incessant labours and brilliant and lasting achievements of this great master. As a schoolboy Pasteur showed no special talent except for drawing, and when in 1842 he was examined for a degree in science he passed without distinction. In the following year he secured admission to the École Normale at Paris and began his work in chemistry and particularly physical chemistry, for which alone he would have been famous. For many years his life was devoted to research in organic chemistry. From pure science he went by degrees to applied science, and for 20 years he worked at the problems of fermentation. Sir William Hale-White referred to Pasteur as the founder, with Koch, of modern bacteriology and with Lister of modern surgery. His work on silkworm disease resulted in the saving of one of France's greatest industries, whereas his service in the prevention of anthrax was another industrial boon. The steps which led to Pasteur's investigations on rabies were also detailed by Sir William Hale-White, while his discoveries in physical chemistry, and notably his work on tartaric acid, formed the subject of an address by Prof. Lowry. Prof. Lowry described how Pasteur was able to pick out the "left-handed" crystals of the optically inactive sodium ammonium racemate from the "right-handed" crystals and by re-dissolving them to make two solutions, one of which rotated polarised light to the left while the other rotated it to the right. The "right-handed" salt occurred in nature and could be fermented by a certain yeast, whereas the "left-handed" salt was unaffected by this or any other organism. The two sets of crystals were related as object and image. Many other organic substances existed in these two forms, but our digestive apparatus was capable of dealing only with the "right-handed" variety. Here, Prof. Lowry said, might have been the real tragedy of Alice when she entered the regions beyond the looking-glass, where she would inevitably have starved in spite of abundance of food. An illustrated lecture on Pasteur as an Artist, by Dr. Gustave Monod, of Vichy, who presented to the Society a book of reproductions of Pasteur's drawings, brought this interesting function to a close. The pastel drawings made by Pasteur as a youth were said to show evidence of considerable ability as well as keen observation of detail.

SEPTIC MENINGITIS OF AURAL ORIGIN.

UNTIL a few years ago septic meningitis was regarded as a necessarily fatal complication when occurring in the course of aural suppuration, but recently recoveries have been reported in slowly increasing numbers; and, though these recoveries still form but a very small proportion of the whole, yet the problems involved are now being attacked in a more hopeful spirit. The technique of operative treatment and the methods of early diagnosis are chief among the problems whose elucidation will further lower mortality. There is little doubt that early operation, while the meningitis is still localised, offers the only reasonable prospect of success, and that recovery is very exceptional when a case has reached the stage in which micro-organisms are present in the cerebro-spinal fluid. Mr. G. J. Jenkins raised these questions in a paper read before the Tenth International Congress of Otology[1] last July. He stated that it remained for otologists to recognise and determine: (1) Those septic affections of the ear that are especially prone to cause meningitis; (2) those symptoms and signs that are associated with the early stages of meningitis; and (3) those symptoms and signs that will indicate the region of greatest intensity of the inflammation, as well as the probable limits, if any, of the affected area. Thus he believes that the principal factors influencing changes in the cerebro-spinal fluid obtained by lumbar puncture are the site of maximum infection and the stage reached by the inflammatory process, and that the nature of the invading organism has relatively little influence. He endeavours to distinguish clinically between primary infection of the cisterna pontis, which can only occur through the labyrinth, and primary invasion of the trabeculated subarachnoid tissue such as takes place through the tegmen into the middle fossa and from an infected lateral sinus into the posterior fossa. In the former the symptoms are largely masked by the concomitant labyrinthitis, but the cerebro-spinal fluid on lumbar puncture shows increase of pressure, turbidity, and numerous cells; the temperature is only raised to 100° or 101° F., and the pulse is slow, the patient torpid, while the rigidity of the neck muscles, which slowly develops, is a most important sign. In localised meningitis in the middle fossa, the temperature is usually 101° to 102°, with the pulse-rate increased in proportion, and the lumbar puncture fluid normal or very little altered; the only suggestive sign being well-defined pain, often with tenderness, above the ear. Lumbar puncture alone cannot be seriously regarded as a method of treatment; and besides eradicating the causative ear disease, drainage must speedily be established at the site of maximum infection. In all cases of acute labyrinthitis, or of acute inflammation of the ear with old destruction of the labyrinth, a lumbar puncture is done at the beginning of the operation, and the fluid examined during the performances of the radical mastoid; if the report indicates meningeal inflammation, translabyrinthine drainage through the internal auditory meatus is effected. In all cases of acute labyrinthitis a superior and inferior labyrinthotomy is done by Mr. Jenkins, although the cerebro-spinal fluid be normal; on this point he is at variance with the great body of otological opinion, for the majority hold that

[1] X^e Congrès International d'Otologie, Paris, Saint Amand (Cher.), 1922. Imprimerie A. Bussière.

it is safer not to operate in the acute stage of labyrinthitis, unless signs of meningitis are present. In our present issue we print a report by Mr. H. L. Martyn of a case of recovery from otitic meningitis after drainage by a different route. Now that it is becoming recognised that recovery from otitic meningitis is possible, such cases will be treated with greater hopefulness and with correspondingly greater success, and the publication of the successful cases assists in the progress of treatment by encouraging others to obtain similar results.

MEDICINE IN FORMOSA.

THE medical report of the Tainan Hospital in Formosa has reached us. Dr. J. L. Maxwell and Mr. Percy Cheal, reviving the practice suspended during the years of unsettlement, deal with the period from January, 1920, when the hospital was reopened, to the end of October last. The hospital, which is under the care of the English Presbyterian Mission, disposes of a large amount of clinical material: nearly 3700 operations were performed during this time; 4700 injections were given, a large proportion for the treatment of leprosy and syphilis, with some 1300 anti-cholera vaccinations; and there was a total of 77,000 out-patient attendances. The medical officers intend to publish yearly reports in the hope of directing renewed attention to the comparative pathology of different human races. The knowledge already obtained would, they think, sound the death knell of some current theories of the ætiology of disease. For example, the theory of the bovine origin of certain forms of tuberculosis might have been promulgated with more caution had it been known that tuberculosis in all forms is rampant among Chinese whose diet precludes any possibility of bovine infection. Again, they note as a hardy perennial in medical literature the theory that internal hæmorrhoids are due to the abandonment of the primitive posture in defæcation; whereas in the Tainan records the condition commonly occurs in the male sex which still adopts a primitive posture, while the women, who use commodes, are almost immune. Ankylostomiasis occupies the close attention of the hospital, the stools of all in-patients—over 2000 a year—being examined on admission, with the result that an infection rate of nearly 40 per cent. has been found. The Tainan medical officers recognise the drawbacks attending the exhibition of all the usual vermicides, and an experiment with carbon tetrachloride is now promising well. This drug, it may be noted in passing, has recently gained good opinions[1] in the Southern States of U.S.A. Prolonged trial has been given to the newer remedies for leprosy, and more than 3000 injections of chaulmoogra oil or its derivatives have been given to some 120 patients, of whom 25 per cent. have apparently been cured and others greatly improved. Tartrate of antimony has proved disappointing in the treatment of lung distomiasis, the number of eggs expectorated during the treatment not diminishing or showing signs of degeneration. On the other hand, intravenous antimony has proved of help in apparently hopeless cases of granuloma pudendi in which salvarsan has invariably failed. Cancrum oris is in Tainan a not infrequent sequel of measles, and whereas formerly almost hopeless, salvarsan injections are now saving the lives of 75 per cent. of the sufferers. Nevertheless, the success of this treatment raises a difficult ethical problem, inasmuch as the life prospect of a heathen girl with disfigured face is distressful. Massive splenomegaly attended with cirrhosis of the liver and terminal ascites is terribly common in Formosa and its treatment as yet unsatisfactory, although splenectomy at an early stage has been encouraging. The report concludes with the expression of a doubt whether work of such importance and on such a scale should be left to the charge of two doctors, two part-time trained nurses, two more or less trained Formosan assistants, and a few others devoid of any training whatever. The difficulty is one of finance.

[1] The Military Surgeon, February, 1923, p. 187.

HYPERSENSITIVENESS TO SILK.

AN instructive case of hypersensitiveness to silk is the subject of a modest note by Dr. J. A. Clarke and Dr. G. P. Meyer in the Journal of the American Medical Association of Jan. 6th. A woman student, aged 21, with a typical family history of asthma, eczema, and hay-fever, was referred to the authors of the note for asthma of three months' duration. There were no clues as to a possible cause, and physical examination revealed nothing but chronic eczema. Tests according to Cooke's technique gave no results. Later, the patient, who had previously denied having had urticaria, volunteered the information that for the last two years only, following an attack of influenza, "welts" had developed on her skin whenever it came in contact with silk. She brought a silk blouse to the consulting room, and, having put it on in the presence of the authors, in 15 minutes developed a giant urticaria at all points of contact, but most markedly on the arms. Twelve minims of epinephrin gave little relief, and the urticaria lasted 12 hours though the blouse was at once removed. The silk was extracted according to the method of A. F. Coca, and an intradermal test gave rise to a typical constitutional reaction lasting two hours, with urticaria, asthma, &c. The extract from a single strand of silk gave a sharp cutaneous reaction. This hypersensitiveness is apparently rare—not one of 500 cases of asthma and urticaria tested reacted to the extract. Other attacks occurred, mostly in connexion with silk worn by companions or, in one instance, with a silk bed quilt. Hyposensitisation was attempted, but after four months of treatment the patient was able to stand barely half the original dose which had given an alarming reaction. There was a decided improvement noticeable in the asthma, which might be attributable to the injections or to the care with which the patient now avoided contact with silk. The authors conclude that there are cases in which hyposensitisation is effective to such a slight extent as to be almost valueless. However, as the authors themselves point out, the dosage for desensitisation is open to criticism. Though the amount of protein involved in the injections was extremely uncertain, yet the doses appear to be very big as compared, for example, with the well worked out cases of hay-fever and horse asthma. Again the doses were repeated once a week, or even at longer intervals than that. Desensitisation against horse asthma can be done much more expeditiously by inoculating every day. This case is interesting in that the routine skin reactions, though they gave some positive reactions, yet gave nothing of value. J. Freeman considers that unless the history of the patient gives a decided lead, as it did toward silk in this particular case, nothing is likely to come out of routine skin testing.

THE INNERVATION OF THE HUMAN PIA MATER.

HAVING regard to the views at present held by physiologists as to the conditions which determine the intracranial blood circulation, the summary of the innervation of the pia mater and the choroid plexus by Philipp Stöhr,[1] the distinguished histologist, is of considerable importance. Stöhr investigated the distribution of the pial nerves in human fœtuses, and in three adults who were executed. He found that all the blood-vessels of the pia mater and choroid plexus are supplied by nerves. The arteries are provided with a coarse network of fibres in the outer part of the tunica adventitia, and a finer network in the deeper part of this coat, while the muscular coat has very fine fibres. Sensory nerve-fibres are present and here and there ganglionic nerve-cells. The smallest arteries are especially rich in sensory nerve-endings, the capillaries also are accompanied by nerves which terminate in knob-like endings on the wall of the vessel. The small

[1] Zeitsch. f. Anat. u. Entwicklungs ges., vol. lxiii., 1922.

veins are also provided with nerves. The nerves to the blood-vessels arise partly from the carotid and vertebral plexuses, and partly from the third, sixth, tenth, eleventh, and twelfth cranial nerves, and other branches come from the sympathetic and parasympathetic. The sensory fibres to the arterioles come from the cranial nerves named. The nerves present in the connective tissue coat of the vessels of the pia come mostly from the third, sixth, ninth, tenth, eleventh, and twelfth cranial nerves or direct from the pons, and the nerves are most numerous and largest on the vessels at the base of the brain, while in the vertex they are fewer in number and smaller in diameter. The choroid plexus of the fourth ventricle receives fibres from the ninth and tenth cranial nerves. The several nerve-fibres interlace and form a wire-meshed network. Some of the fibres are processes of the nerve-cells which lie singly or in groups in the pia mater, and the network is distributed all over the pia of the cerebrum, but so far nerve-endings have not been found on the pia of the cerebellum. The blood-vessels of the choroid plexus receive an extraordinary rich supply of nerve-fibres, and some of them have characteristic nerve-endings—pear-shaped or like Meissner's corpuscles. The author concludes that the blood circulation in the cranium is under the control of the nervous system, and the prime function of the pia mater seems to be to regulate the amount and pressure of the blood supplied to the cerebral substance. The functions of the choroid plexus equally is also under the influence of the nervous system and one function of the plexus would seem to be to help to regulate the pressure of the cerebro-spinal fluid. The nerve-terminals in the pia act as protective organs for the control of intracranial pressure and perhaps also for the movements of the cerebro-spinal fluid. The third and fourth ventricles are protected by the rich nerve-plexuses in their blood-vessels.

POST-GRADUATE COURSES IN THE PROVINCES: THE UNIVERSITY OF BRISTOL.

IN connexion with the post-graduate courses arranged from time to time at local centres such as Trowbridge and Barnstaple, in the neighbourhood of Bristol, a classified list of demonstrations available for selection by local centres during 1923 has been issued. The courses arranged in the past two years [1] have been so much appreciated by practitioners in various districts in the south-west of England that the adoption of a similar scheme by other universities might afford some solution of the problem of providing post-graduate revision courses throughout the country. The syllabus of the courses available in the south-west of England is as follows:—

Circulatory System.—(1) Arterial tension; (2) Newer methods of examination of cases of cardio-vascular disease; (3) Principles of prognosis and treatment of heart disease; (4) Ventricular failure—forms, signs, and treatment; (5) Bradycardia, tachycardia, and fibrillation—causes, diagnosis, and treatment; (6) Arterio-sclerosis.

Alimentary System.—(1) Physiology and pathology of alimentary tract; (2) Diagnosis and treatment of gall-bladder diseases; (3) Abdominal pain and its causes; (4) Differentiation of the acute abdomen and its simulators; (5) Diagnosis and treatment of common gastric disorders; (6) Congenital hypertrophic pyloric stenosis; (7) Peptic ulcers—true and false; (8) Appendicitis and functional disease of the colon; (9) Treatment of constipation; (10) Practical value of routine examination of stools; (11) Diagnosis of hepatic insufficiency; (12) Medical diagnosis and treatment of dyspepsia.

Respiratory System.—(1) Pneumonia—complications and treatment; (2) Blood and sputum in atypical lung conditions; (3) Effects of thoracic lymph-gland infections upon subsequent lesions; (4) Modern treatment of empyema and abscess of the lung.

Genito-Urinary System.—(1) Modern treatment of stricture and prostatic cases; (2) Renal efficiency tests and their value in medical and surgical practice; (3) *Bacillus coli* infections of the urinary tract; (4) Toxæmia of pregnancy; (5) Syphilis in women—diagnosis and treatment.

Nervous System.—(1) Mental deficiency and feeble-mindedness—ætiology, diagnosis, and treatment; (2) Diseases of the extra-pyramidal motor tracts—ætiology, signs, prognosis; (3) Paroxysmal paralysis of the elderly; (4) Hysteria—signs, differential diagnosis, and treatment; (5) Signs of mental breakdown; (6) Value of cerebro-spinal fluid examinations; (7) Recent work in neuro-syphilis—its bearing on treatment; (8) Infantile paralysis—ætiology, stages, prevention of deformities.

Sensory Organs and General Diseases, &c.—(1) Tonsils and adenoids and treatment of otorrhœa; (2) Nose, throat, and ear disease, considered as sources of general medical symptoms; (3) Nasal catarrh—symptoms, ætiology, and treatment; (4) Ear discharges—sources and treatment; (5) Iritis, associated with chronic infections; (6) Common forms of conjunctivitis with regard to age-periods and treatment; (7) The reading of radiograms and the applications of radiology; (8) Difficulties associated with the administration of anæsthetics; (9) Inter-relations of internal secretion glands; (10) Endocrinology; (11) Treatment of painful feet; (12) Diabetes and modern methods of treatment; (13) Physio-therapy—principles and methods.

Pathology and Bacteriology.—(1) Normal and acquired resistance to disease; (2) Pathology of breast cancer applied to treatment; (3) Choice of pathological methods in diagnosis; (4) Anaphylaxis and its applications in diagnosis and treatment.

Dental.—(1) Oral sepsis—extraction of teeth and necessary preliminaries; (2) Points in the care and treatment of children's mouths.

A series of eight post-graduate demonstrations will be held in the medical school of the University at 3.30 P.M. on Thursdays, beginning on April 12th. Inquiries should be addressed to the Director, Post-Graduate Medical Studies, Pathological Department, University of Bristol.

[1] See THE LANCET, 1921, ii., 1178.

THE DIAGNOSIS OF HILUM TUBERCULOSIS.

HILUM tuberculosis has been caustically defined by Sir James Kingston Fowler as "a shadow first seen in a darkened room and not yet clearly recognised in the daylight of the post-mortem room." Undoubtedly there is such a condition; the work of Dr. Clive Riviere and numerous Continental investigators has established its existence beyond peradventure. But Sir J. Kingston Fowler has done good service in holding up to ridicule the radiologist who relies on a skiagram alone for the diagnosis of this condition. It is certainly elusive, and in a recent paper Dr. A. Brinchmann,[1] of the Rikshospital in Christiania, has shown that both the positive and the negative evidence of the X rays is unreliable. He selected 180 skiagrams, taken of the chests of 154 children, and while he was scrutinising these skiagrams he kept himself in ignorance of the clinical reports. The skiagrams showed signs of enlarged bronchial glands in 41 cases, and infiltration of the lungs in 12. The evidence was doubtful in 51 cases, and in 50 there was no definite sign of enlarged bronchial glands. Of the 41 children with skiagraphic evidence of enlarged bronchial glands, 10 showed no clinical sign of this condition. On the other hand, among the 50 children whose skiagrams were negative, there were as many as 28 with clinical evidence very suggestive of hilum tuberculosis. Dr. Brinchmann's comparative study of the seven most popular clinical tests for hilum tuberculosis leaves them with a reputation as tattered as that of the X rays. The seven tests were: (1) Dullness in the interscapular region, (2) dullness over and just beyond the manubrium sterni, (3) dullness over the spinous processes of the fifth and sixth vertebræ (de la Camp's vertebral percussion), (4) tenderness over the spinous processes of the second to the seventh dorsal vertebræ (Petruschsky's spinalgia), (5) Eustace Smith's sign, (6) a bronchial blowing sound in the interscapular region, and (7) d'Espine's sign. The 180 children subjected to all these tests were grouped in two classes according as the history and symptoms did or did not suggest the existence of hilum tuberculosis. There were 103 in the first class, 77 in the second. Eighty in the first class and 23 in the second reacted to tuberculin. d'Espine's sign was positive in 65 per

[1] Norsk Magazin for Lægevidenskaben, November, 1922.

cent. of the first class and in 12 per cent. of the second. Eustace Smith's sign was positive in 13 per cent. of the first class and in 4 per cent. of the second. Interscapular blowing respiration was heard in 42 per cent. of the first class and in 5 per cent. of the second. De la Camp's sign was positive in 18 per cent. of the first class, and in the second it was invariably absent. Dullness over the manubrium and in the interscapular region was also found far more frequently in the first than in the second class. But, and this was a very significant observation, there was not a single case in which all the seven signs or tests were positive. The signs which emerged from these investigations with least tarnished reputations were d'Espine's and interscapular blowing. At present it must be admitted that there is not a single test which is pathognomonic of hilum tuberculosis. It cannot, however, be denied that great and growing importance is attached to this manifestation of tuberculosis, and we would refer our readers to a recent short monograph on the subject by Dr. Marcel Paillet.[2]

INTERNATIONAL HEALTH ORGANISATION.

LAST week saw the beginning of a tour in Great Britain of a party of medical officers from 14 European countries, the United States of America, and Japan. The work was confined to London during the first week, and the tour is now being continued in various provincial centres in England and Scotland and will last until Eastertide. The delegates will conclude their visit with some further observations in London and a conference. The tour has been arranged by the Health Organisation of the League of Nations, with the financial facilities put at their disposal by the Rockefeller Foundation. The object of this scheme is the promotion of international public health by enabling the medical officers of the various civilised countries of the world to familiarise themselves with the health methods which are pursued in countries other than their own. In Great Britain there is, generally speaking, a woeful lack of knowledge of the methods of health administration obtaining in other countries.

The present visit is the second tour arranged by the League's Health Organisation, the first having included Belgium and Italy. It has been organised at the request of the Ministry of Health by the Society of Medical Officers of Health, the details having been arranged by a committee of the Society presided over by Dr. W. J. Howarth, medical officer of health, City of London. The week's proceedings included inspections of the work of the various departments of the Ministry of Health, the Royal Army Medical College, the General Register Office at Somerset House, the institutions of the Metropolitan Asylums Board, the works and laboratories of the Metropolitan Water Board, and the London County Council's housing schemes at Tabard-street and Roehampton. On the social side, also, the week was well filled. The delegates were officially received at the Ministry of Health by Lord Onslow, Capt. W. E. Elliot, M.P., and the chief medical officer (Sir George Newman), and there were receptions at the Royal Sanitary Institute, the Royal Army Medical Corps mess, and the League of Nations Union. The delegates also attended the Pasteur celebration at the Royal Society of Medicine. At the reception on Feb. 28th by the League of Nations Union at 15, Grosvenor-crescent, London, Lord Robert Cecil, chairman of the Executive Committee of the Union, extended a hearty welcome to the delegates, and referred to the circumstance that it was through the generosity of a citizen of the United States, a country still outside the League of Nations, that the visit was rendered possible. Lady Isabel Margesson, chairman of the Hospitality Committee of the Union, also welcomed the delegates.

[2] Étude de l'évolution des adénopathies hilaires tuberculeuses par la Comparaison des Examens cliniques et radiologiques, Paris, 1922, Jouve et Cie., pp. 60.

The investigations in the provinces on which the delegates are now engaged embrace visits to Glasgow and Lanarkshire, Birmingham and Warwickshire, Liverpool and Lancashire, Manchester and Cheshire, the towns of the West Riding of Yorkshire, and Newcastle and Durham County; and the conclusion of the tour will include inspection of the food control work and the port sanitary work in London. The countries represented include the following: Austria, Belgium, Czecho-Slovakia, Denmark, Finland, France, Hungary, Italy, Japan, Jugo-Slavia, Norway, Poland, Roumania, Sweden, Russia, and the United States of America, the last two being still without the League. Future tours of similar parties, including British delegates, are being arranged in other countries, the next being in Austria.

ALCOHOL AND AGE LIMITATION.

THE Teachers' Bill, amending the law relating to the sale of intoxicating liquor to persons between 14 and 18 years of age, will be taken to-day, Friday, March 9th. The Teachers' Committee, which has promoted the Bill, represents a remarkable unity of opinion on the subject. Representatives of great public schools, Catholic as well as Protestant, of grammar schools and of secondary schools, have combined with officers of the National Union of Teachers to bring before Parliament their considered view that the adolescent should be safeguarded from the temptations of alcohol. The main argument employed, in the many public deliveries from responsible persons which have recently appeared, is that, while the present Education Act can claim the adolescent period of boys and girls for education, handing over to the teachers complete supervision of their charges during those impressionable years, the responsibilities of the teachers can only be discharged if they are not thwarted by the countervailing influences which are particularly associated with freedom to obtain alcohol. It is a weighty argument and a well-supported one.

In expressing the opinion that the Bill ought to receive the approval of the House of Commons we are quite aware of the difficulties associated with the fixing of a definite age limit where varying temperaments and conditions are concerned. But restrictions to the use of intoxicants in the case of young persons do not form an interference with national liberty, for the young are dependent upon their seniors and complete freedom of judgment is not their inalienable right. Now recent experience indicates that the age of adolescents is a particularly unstable one, and this fact in all probability accounts for the support of the Teachers' Bill which has been forthcoming from medical men who have had experience in dealing with the evils of alcoholism. Undoubtedly the taste for alcohol often declares itself during adolescence—this we can allow without endorsing the oft-repeated statement that abstinence from alcohol up to 21 will remove apprehension for the future—and we see sound sense in making it difficult for young persons to gratify that taste. The Bill should receive assistance in debate from some of the medical Members of Parliament.

TREATMENT BY RADIUM.

THE history of the development of that modern technique in radio-therapy which is outlined in the report for 1922 of the London Radium Institute (see p. 503) is instructive. Originally the French radio-therapists used only superficial applications of radium. With them grew up ideas on the subject of the employment of different varieties of screening, together with the method of diminishing the destructive action on the skin by cutting off direct irritating and secondary radiation. The burying of screened tubes in growths was the next step in progress, and by this means many tumours could be made to disappear which could not be adequately

treated by superficial applications. Subsequently, acting along two different lines of thought, attempts were made in the first place to use only the more penetrating rays by means of very heavy screening, together with the employment of very large quantities of radium, and to use distance by removing the applicator away from the skin surface. At the same time the tremendous amount of energy present in the Beta rays was recognised. They had been employed in the treatment of rodent ulcers and superficial skin lesions, but the American recognition of the possibility of burying small, unscreened glass tubes in tumours made possible the deep use of Beta rays, with considerable improvement in the treatment of hitherto intractable conditions, such as carcinoma of the mouth, although these rays are not applicable in all cases. Later on the surgeon began to recognise the great value of radium in association with surgical procedures in the treatment of malignant disease. Not only can it be used for prophylactic purposes after operation, but the burying of radium tubes at the time of operation may make a case previously regarded as inoperable come within the bounds of the operable. It is difficult by the use of radium alone to make an inoperable case operable owing to the amount of fibrosis which often follows radium treatment, but it is by no means impossible, and the proper use of radium in association with surgery is now mainly a matter of the consideration of the half-dozen different methods of association of the two treatments which are to be combined. The pathologist has by the examination of tumours definitely established the fact that radium can destroy malignant growths, but difficulties arising from situation, from the possible formation of secondary deposits, and from the necessity of avoiding damage to healthy tissues still remain to be solved. Radium has, however, made for itself a definite place in the modern therapy of cancer.

Radium has also had an indirect influence in the treatment of malignant disease. The value of a very penetrating ray, susceptible of accurate measurement, in the treatment of deep tumours, was largely the cause of the establishment of the new technique for deep X ray treatment. It led to an attempt being made to produce a penetrating X ray in large quantities and X ray tubes of a regular output. At the present time deep X ray treatment is still a somewhat complicated process involving much mathematical calculation, but doubtless in the course of time it will be greatly simplified. Much work is being done upon the lines of combining X ray and radium treatment, and it is probable that in the future there will be no artificial separation of radium from X rays. The present divorce of these two methods of treatment results mainly from economic causes.

THE Council of the Royal Society recently recommended 15 persons for election into the Society, of whom the following are distinguished in medicine or allied subjects: Dr. E. D. Adrian, university lecturer in physiology, Cambridge; Dr. E. Fawcett, professor of anatomy, University of Bristol; Dr. R. T. Leiper, professor of helminthology, University of London, and director of the department of helminthology in the London School of Tropical Medicine; Dr. J. J. R. Macleod, professor of physiology in the University of Toronto; Dr. F. Horton, Sc.D., D.Sc., professor of physics, University of London (Royal Holloway College); Dr. J. W. McBain, Ph.D., professor of physical chemistry, University of Bristol; Dr. G. A. K. Marshall, director of the Imperial Museum of Entomology; Dr. H. R. Procter, D.Sc., emeritus professor of applied chemistry, University of Leeds; and Dr. W. Wilson, D.Sc., Ph.D., professor of physics, University of London (Bedford College). Amongst the other names is that of Sir Douglas Mawson, D.Sc., leader of the Australasian Antarctic Expedition 1911–1914.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

X.

THE TREATMENT OF EPILEPSY.

IT is not possible in the present state of our knowledge to give a satisfactory definition of epilepsy; it can, perhaps, be best defined as a condition characterised by periodic or irregularly recurring attacks of loss of consciousness, with or without convulsive seizures, the typical attacks being occasionally replaced by other manifestations of a nervous or psychical nature, and though often associated with organic disease of the brain is not itself dependent on any recognisable specific structural changes in it. Epilepsies not associated with demonstrable disease are generally termed *idiopathic*, and it is with the treatment of these I deal here. As our definition of epilepsy is symptomatic rather than pathogenic, our treatment of it can be only symptomatic too. But this does not mean that our aim is only to check the occurrence of seizures, for experience has shown that if we can for a sufficient time arrest manifestations of the disease, or "break the habit of fits," these may not recur when treatment is stopped.

Epilepsy is not a condition that can be treated by mechanical or rule-of-thumb methods, since some epileptics react favourably to one drug only, some to another, and it is usually only by experiment that the treatment most suitable to any case can be determined.

Drug Treatment.

Countless drugs of natural or synthetic origin have been employed, but those which have stood the test of experience are few. Among these bromide, by universal consent, stands first.

Bromides.—The salt employed is a matter of little or no consequence, and a mixture of two or more bases has no advantage. The dose should be that from which the maximum benefit is obtained, provided it produces no unfavourable effects on the patient: rarely more than 40 to 60 gr. a day is required. The depressing or dulling effect frequently attributed to bromide is rarely serious, provided it is carefully administered. It is always preferable to give as few doses a day as possible; frequently two doses, and occasionally one, suffice. Not only is the efficiency of large doses greater, but there is more probability that it will be taken regularly, and absolutely regular and systematic medication is one of the essential elements of success. In cases where the seizures tend to occur about the same hour each day it is important that the drug should exert its maximum effect when the attacks are expected. A dose of 20–30 gr. at bed-time, for instance, frequently checks nocturnal epilepsy. When attacks occur chiefly in the early morning, one dose at bed-time and another of 10–15 gr. immediately on waking, and at least 20 minutes before the patient leaves bed, is advisable. Similarly, when, as is often the case, attacks are more frequent in women at or about the menstrual periods, the daily dose should be increased or even doubled for some days before and during the menses.

Regular and continuous administration is essential; when the most effective daily dose is determined it should not be varied until the patient has been for a long period, at least 18–24 months, free from symptoms. Many failures and even disastrous consequences result from the sudden cessation or diminution of the dose. If greater frequency of the attacks necessitates an increase the later decrease should be

gradual, not abrupt. The salt-free diet originally introduced by Richet and Toulouse with the aim of partly replacing the chlorides of the body by bromides, is now less fashionable than formerly, but it is often a useful expedient. When the patient is not under constant supervision the efficacy of the dietary régime may be controlled by estimating the daily output of sodium chloride in the urine.

There are undoubtedly a small number of cases in which bromides are not merely inefficacious but actually harmful, upsetting the physical and mental state of the patient without controlling the seizures; this is most common in minor epilepsy, but it is occasionally so in the major disease too. In such cases other remedies must be employed.

Borates are generally given as sodium biborate, or borax, in doses of 10–15 gr. twice or three times a day, usually in combination with bromides. Borates are undoubtedly valuable drugs in many cases, particularly, in my experience, in major nocturnal epilepsy; but they often check petit mal too, and as the drug has no untoward effects it may be continued indefinitely. In some cases it is as effective as bromide, and may consequently replace it when the latter is not tolerated. Pierre Marie and his colleagues have recently recommended tartarus boraxatus, or sodii boro-tartras, of which as much as 150 gr. a day may be given; it seems doubtful if it possesses any advantages over the simpler preparations.

Calcium salts are occasionally useful as adjuvant drugs. In a small proportion of cases calcium lactate in doses of 7–10 gr. combined with bromide undoubtedly helps to check the seizures. I have found it particularly useful in children in whom the epilepsy is due to or associated with congenital or early acquired cerebral lesions.

Zinc oxide has been recommended in minor epilepsy, but in a recent analysis of a large number of cases under my care I discovered one only in which it had apparently had any influence.

Picrotoxin has a very limited application and is, in my experience, seldom of use. It is, however, one of the constituents of Gelineau's dragées, which are occasionally successful when other remedies fail.

In *belladonna* we have one of the most valuable remedies in the British Pharmacopœia. To obtain its full benefit large doses are often necessary, even 10–15 ♏ of the tincture twice or three times a day, if so much is tolerated. Bromide should always be given with it. It benefits both major and minor epilepsy, but its most striking effects are seen in the latter. One girl, subject from childhood to frequent attacks of petit mal which no other drug controlled, has remained free for several years while taking 15 ♏ twice a day, but the attacks always recur when she drops the drug; and a man, aged 40, who since the age of 17 had, every two or three weeks, series of attacks followed by confusion and violence which repeatedly brought him into asylums, remained three years completely free while taking tinct. belladonnæ 12 ♏ twice a day until last summer, when, during my absence, the dose was reduced to half. The toxic symptoms of the drug, the most important of which are paralysis of accommodation, unpleasant dryness of the throat, and mental excitability, must, of course, be avoided.

Luminal.—In 1912 Hauptmann introduced a new remedy of undoubted value—viz., phenylethylmalonylurea, or luminal. Its sodium salt, which is soluble, is sometimes used, but general experience shows that it is not so effective. The dose varies between 1½–5 gr. per day, but as toxic symptoms are not uncommon it is advisable to begin with small amounts and increase the dose, if necessary, when the patient's tolerance is ascertained. I generally give first 1½ gr. each morning or evening, according as the fits occur most frequently by day or night; then 1 gr., and later 1½ or 2 gr. twice a day if necessary. There are few cases in my experience which require larger doses than 4 gr. a day.

It is particularly in idiopathic major epilepsy that luminal is of service; I have been disappointed with its use in the treatment of petit mal, and of seizures due to gunshot injuries and other gross lesions of the brain. It often arrests or diminishes the frequency of the fits when bromide and other drugs fail, but my experience does not confirm the statements of certain German authors, who claim that it may replace all other drugs, for in my hands it has certainly been less effective than bromide. It seems doubtful if it has an actual curative value since the seizures recur, often more frequently, when it is omitted. It may be administered for long periods, but I find that after a time it is often necessary to increase the dose, as it tends to lose its effect. The most common toxic symptoms are drowsiness, vertigo, disturbances of coördination and speech, rashes, and œdema, and occasionally restlessness and excitability. Changes in character after prolonged luminal treatment, which do not clear up when the drug is stopped, have also been recorded. The intolerance to the drug is said to be reduced by a milk and vegetarian diet. Bromide and other remedies may be given at the same time; personally I have found luminal most useful when combined with these. It has already acquired a reputation in diminishing the excitability and restlessness of patients with mental symptoms, and will be probably found of greatest value in the treatment of epileptic psychoses in institutions where its effect can be carefully controlled.

Other Forms of Treatment.

Various hypotheses as to the nature of epilepsy have suggested many other modes of treatment. It is very doubtful if so-called "reflex causes," as intestinal worms, uterine displacements, ovarian diseases, and ocular abnormalities play any part in the pathogenesis of the disease, but as they may, like other conditions that affect the general health, be predisposing factors, they should, when possible, be remedied. The administration of organic extracts, on the supposition that epilepsy is due to disturbances of endocrine functions, has proved unsuccessful. Partial removal of the adrenals, advocated by Fischer, has been extensively tried in Germany with disappointing and occasionally disastrous results. Protein therapy, which has been recently reintroduced on the assumption that the seizures are anaphylactic phenomena, has apparently yielded favourable results only in the hands of the enthusiastic discoverers of each new method.

General Treatment.

The general care of the patient and the regulation of his life are extremely important factors in the treatment of epilepsy. The measures taken must depend largely on the frequency of the seizures and the physical and mental state of the patient. Provided his general health is fair and that no serious degree of mental deterioration exists, the fewer restrictions placed on the patient the better. Whilst unavoidable dangers should not be run, and occupations attended with risk to themselves and others forbidden, epileptics certainly do much better when they are allowed to lead an ordinary healthy life, and mix in games and work on equal terms with their fellows. Unless the attacks are frequent and severe little or no change in the scope of education is necessary. Plenty of outdoor exercise by day, and long hours of rest at night are advisable. The general rule should be, in fact, to make youthful patients at least feel as little as possible that they are abnormal or different from others.

Diet should be simple, and overloading of the stomach and constipation should be avoided. In certain cases a meat-free diet undoubtedly benefits the patients, but, in my experience, very few cases gain much improvement by the exclusion of meat, though the amount taken can be often usefully reduced. Alcohol in every form should be rigidly excluded.

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Special Articles.

THE LONDON RADIUM INSTITUTE.
REPORT FOR 1922.

THIS annual report follows its customary lines. The first and greater portion, written by Mr. Hayward Pinch, gives an outline of the methods used by the Institute in treating diseases of the alimentary canal and its accessory glands. It is obviously intended mainly for the instruction of those not closely in touch with radium work. As a result it is quite conservative in its outlook, and keeps closely to the older and more tried methods of treatment.

The following abstracts of some of the sections give an indication of the broad scope of the report, dealing as they do with diseases of varied pathology affecting different parts of the body.

Fordyce's Disease of the Lips.—Many patients affected with this condition are little troubled by it. In cases where stiffness and soreness, accompanied by a scanty, sticky, mucoid secretion, occasions the patient discomfort, careful examination usually reveals groups of closely aggregated minute white or yellow milium bodies in the mucosa. Exposures of from 20 to 30 minutes' duration with "half-strength" applicators, screened with 0·01 mm. of aluminium, usually suffice to effect a cure, and the condition but rarely recurs.

Epithelioma of the Lip.—Radium therapy should be confined to the treatment of inoperable cases of epithelioma of lip, or of cases in which operation has been refused. It should be carried out both by the burying of several small platinum screened tubes in the substance of the growth, and external irradiation of its surface and periphery. The dose should be a heavy one. All efferent lymphatics and associated lymphatic glands must at the same time receive a prolonged radiation with heavily screened apparatus emitting a gamma radiation. Great benefit is very often obtained in inoperable cases. In instances where operation has been declined, and the growth is relatively small and circumscribed, "apparent cure" of the condition quite frequently results from judicious radium treatment, but this possibility should not be allowed to influence the general rule that operable cases should be excised promptly and freely when consent is given.

Leukoplakia of the Cheeks.—There are three definite degrees of the condition: (1) The affected area is slightly congested, and the epithelium swollen, forming a translucent glistening patch. (2) The patch becomes thickened, opaque, and pearly white in colour, sometimes forming a distinct raised plaque with overhanging edges. In the third stage the patch becomes still thicker, cracked, and fissured, and at the bottom of the fissure ulceration occurs, and may prove the starting-point of an epithelioma. The treatment of these patches with radium varies according to the stage of the disease. In cases of the first degree, exposures of 15 to 30 minutes' duration, with "half-strength" applicators, screened with 0·01 mm. of aluminium, will usually induce the speedy disappearance of the lesion. In the second stage, "half-strength" applicators, screened with 0·1 mm. of lead, should be used, and an exposure of one hour's duration given on two or three successive days. The series of exposures may have to be repeated at intervals of four weeks, until the condition of the mucosa becomes normal or apparently so. These cases show a strong tendency to recur. Third stage must be regarded as definitely precancerous, and the patch should be speedily excised.

Chronic Superficial Glossitis.—This condition may be either hypertrophic or atrophic; the former variety only is amenable to radium therapy. It is characterised by the presence of one or more irregular opaque or pearly white patches on the surface of the tongue, which vary greatly in thickness, and sometimes form raised horny plaques with overhanging edges. The condition is recognised as definitely precancerous. In the early stages great improvement is often effected by exposures of one hour's duration with "half-strength" applicators screened with 0·1 mm. lead, two such exposures being given on successive days. The treatment is followed by a gradual exfoliation of the patch, complete in about four weeks. Recurrence is frequent. In advanced cases radium should not be employed—a local excision is imperative.

Carcinoma of the Tongue.—Some diversity of opinion exists as to the best method in which the actual radium treatment of the tongue tissues should be administered. Some workers embed in the affected area, tiny unscreened glass capsules each containing about 1 millicurie of radium emanation, and allow them to become surrounded by fibrous tissue, or to work their way out at some future date. Others use steel or platinum needles containing 2 or 3 mg. of radium bromide, and embed 10 to 30 of these in and around the growth. They withdraw these tubes after a period of from one to seven days. The practice adopted at the Radium Institute is to use tubes containing 10 mg. of radium bromide, screened with platinum 0·3 mm. in thickness. Any number from 2 to 12, according to the size of the growth, is embedded in and around the lesion, and allowed to remain for six hours, the treatment being repeated after six weeks. The amount of local inflammation that follows upon this procedure is not great. The growth shrinks fairly rapidly, and a considerable fibrosis develops four or five weeks later. The portions which have not undergone satisfactory fibrosis are then treated. General irradiation of the lymphatic area of the neck is carried out.

Chronic Hypertrophy of the Tonsils.—When operation is negatived for any reason, radium treatment will often produce a great improvement in the condition. The process is devoid of discomfort, pain, or danger. Prolonged radiation (24 to 30 hours) with "half-strength" applicators, screened with 2 mm. of lead, should be employed, the apparatus being placed externally immediately behind the angle of each jaw, so as to produce a "cross-fire" irradiation. The treatment may be repeated at intervals of six weeks.

Epithelioma and Sarcoma of the Tonsil.—Operative measures should be resorted to whenever practicable, the whole operation area subsequently receiving prophylactic treatment with powerful apparatus screened with 2 mm. of lead. Any inoperable cases should be treated by the actual burying of a tube of 50 to 100 mg., screened with 1 mm. of silver, in the substance of the tonsil for 24 hours supplemented by a powerful "cross-fire" radiation with screened applicators applied externally at the angles of the jaw. In some cases remarkable improvement results.

Sarcoma.—Sarcoma of the tonsil is much rarer than epithelioma. When too far advanced for excision, radium treatment should be carried out by means of tubes screened with 1 mm. of silver, buried in the substance of the growth, and "cross-fire" radiation from screened apparatus applied externally. The immediate result of the treatment is usually satisfactory, and in a few cases treated at the Institute "apparent cure" has been obtained.

There follow examples of less satisfactory diseases from the point of view of radium treatment, and these are useful as a warning that not too much is to be expected in these conditions.

Carcinoma of the Œsophagus.—This usually originates at one of three sites: 1. At the upper orifice. The post-cricoid growth, 15 per cent. 2. Opposite the bifurcation of the trachea, 32 per cent. 3. At the cardiac orifice, 53 per cent.

1. Post-cricoid lesions tend to affect one portion of the œsophageal orifice rather than completely to encircle it, and the growth is often exuberant and vascular; these facts, and the more accessible position of the growth, enable it to be treated rather more easily than the lower ones. The best method of treatment is to introduce a small pointed tube about the size of a wax vesta, the thickness of the wall of which is 1 mm. of silver, and the strength of the contained emanation equivalent to that of from 70 to 100 mg. of radium bromide. A silken thread is attached to the eyeletted stopper which closes the blunt end of the tube. Direct œsophagoscopy should be performed, and the tube inserted actually within the centre of the malignant growth and left for from 18 to 24 hours. The œsophagoscope should be withdrawn, and the silken thread fastened to the cheek with a strapping. The patient should be kept under hospital conditions for a week or ten days. If the reaction be at all severe considerable œdema may result, leading to great stridor and dyspnœa, possibly calling for tracheotomy. The final result is, however, usually beneficial. It is advisable to subject both cervical regions to a powerful screened "cross-fire" irradiation some two or three weeks after the actual growth has been treated.

2. Carcinoma opposite the bifurcation of the trachea is usually annular and ulcerates rapidly. For such a growth a silver tube with walls of 1 mm. in thickness, and charged with radium bromide or radium emanation of about 100 mg. activity, is mounted at the end of a pliable rubber-covered silver wire, and under direct œsophagoscopy is carefully guided into the lumen of the stricture; the œsophagoscope being withdrawn, the pliable rubber-covered silver wire is moulded to the arch of the palate, and the free end brought out at the angle of the mouth and fastened to the cheek with strapping. The exposure should vary from 15 to 20 hours' duration. Immediate improvement in swallowing follows, due entirely to the mechanical dilation of the stricture by the tube. A few days later congestion causes swelling of the stricture, and renders the dysphagia more acute. When the

congestion passes off a certain amount of fibrosis follows, permanently increasing the size of the lumen. In favourable cases the patient can then swallow food for 6 to 12 months, or even longer, though sooner or later the exposure will have to be repeated.

3. Carcinoma of the cardiac orifice quickly implicates the adjacent portion of the stomach mucosa. These cases are the most unfavourable of all to treat. The result, whatever method be adopted, is not encouraging and little more than some slight transient relief can be hoped for.

Carcinoma of the Stomach.—There are three ways in which such treatment may be given: 1. If the disease be fairly localised and accessible the abdomen should be opened, and one or more radium tubes screened with 1 mm. of silver should be buried at equal intervals throughout the mass for 24 hours, when the tubes are withdrawn and the wound closed. A few encouraging results have been recorded from this method of treatment, but since it calls for a laparotomy it is not devoid of danger in anæmic or emaciated subjects. 2. Radiation of the stomach from the interior. In this method an emanation tube of from 100 to 200 mg. activity is prepared and enclosed in a silver capsule about 2 cm. in length, its wall being 1 mm. in thickness. This capsule is attached by means of a screw stopper to about 3 feet of silken thread. It is then introduced by the finger into the upper part of the œsophagus and swallowed by the patient, its passage being expedited by the ingestion of thick porridge or gruel. The progress of the tube should be noted by means of an X ray screen until it has reached the stomach, and its position should then be charted; the tube remains in the stomach for from 24 to 36 hours, its site being changed from time to time if necessary by traction on the silken thread and then withdrawn. This procedure is effective when there is much ulceration of the stomach mucosa in arresting the hæmorrhage. 3. Radiation with numerous powerful heavily screened applicators. This palliative procedure should be adopted in those cases where methods (1) or (2) are either inadvisable or impracticable. It will often relieve the epigastric pain and arrest the rate of growth and retard the development of ascitic fluid; but this is the utmost that can be expected.

Carcinoma of the Rectum.—This disease is seen in men and women in the proportion of 3 to 1. The greater number of cases are quite inoperable when first examined. When a major abdomino-perineal operation appears in any way practicable it is most strongly urged, as the results far exceed anything that can be expected of radium therapy. Colostomy should be advised in every instance. The constant passage of fæces over a carcinomatous growth invariably stimulates its activity. Experiments have shown that columnar-celled lesions of hypoblastic type were more susceptible to a dosage of a large quantity of radium administered over a short period of time than to a small quantity of radium used for a longer period. For this reason it is advisable to use a powerful radium tube when treating rectal carcinoma, and in cases of the annular type a tube of 200–250 mg. activity, screened with 2 mm. of lead, may be used for a period of 10 to 15 hours. The insertion of the tube is best carried out through a proctoscope, the screened radium being attached to a pliable rubber-covered silver wire about a foot long which is bent at the anal orifice, brought into the fold between the buttocks, and maintained in this position with strapping and a "T" bandage. In the "signet-ring" form of growth the action of the main tube may be advantageously supplemented by the use of smaller tubes containing from 10 to 20 mg. of radium, screened with 0·3 mm. of platinum, and inserted into various parts of the main mass. Many patients are averse to the performance of a colostomy; by the employment of this technique it is often possible to prolong their lives in comparative comfort for four to six years.

The Liver.—There are but few affections of the liver in which radium therapy is likely to prove of any real value. Cirrhosis of the liver, amyloid liver, and fatty liver lie within the physician's province, while tropical abscess and hydatid cysts must be treated by surgical measures. Malignant growths of the liver rapidly prove fatal, palliative treatment only being possible.

Diseases of the salivary glands are also dealt with, the surgical point of view being the one chiefly taken in the consideration of their treatment.

Dr. J. C. Mottram's contribution to the report consists of short summaries of papers written during the year, and is very interesting in that it indicates relationships between radiation, vitamin A and B deficiency, and the known blood changes. It also suggests that a diet rich in vitamins A and B should be given to patients undergoing treatment by radiation.

The physical section, written by Mr. W. L. S. Alter, gives a description of an apparatus devised by him for making emanation tubes without the use of liquid air. For details of the apparatus reference must be made to the report, but it has an advantage over Duane's apparatus devised for the same purpose, inasmuch as it appears less complicated and much less tedious to work.

MEDICINE AND THE LAW.

STOPES *v.* SUTHERLAND AND OTHERS.

IN an action for libel Marie Charlotte Stopes, a Doctor of Philosophy (Munich), President of the Society for Constructive Birth Control and Racial Progress, sued Dr. Halliday G. Sutherland with regard to passages in a book entitled "Birth Control," the publishers, Messrs. Harding and More, Ltd., being also made defendants. In the statements complained of under the heading Exposing the Poor to Experiment, were references to "a birth-control clinic where working women are instructed in the method of contraception described by Professor McIlroy as the most harmful method of which I have had experience," and also a statement that Charles Bradlaugh was condemned to gaol for a less serious crime than the plaintiff's "monstrous campaign of birth-control." The hearing before the Lord Chief Justice and a special jury has ended in a judgment for the defendants upon certain answers of the jury to questions left to them, and as it is stated that an appeal will follow, a statement of the points of law involved will suffice.

The jury found as follows: (1) Were the words complained of defamatory of the plaintiff?—Yes. (2) Were they true in substance and in fact?—Yes. (3) Were they fair comment?—No. (4) Damages (if any)?—£100. Sir Hugh Fraser claimed judgment upon answers (1) and (3), contending that the alleged libels stated above were expressions of opinion and comment which the jury had found not to be "fair comment." Lord Hewart ruled that they were not so, but were statements of fact. Mr. Ernest Charles, K.C., for Dr. Sutherland, argued that on the answers to the first two questions the defendants were at law entitled to judgment; that is to say, that the finding of the jury that the words were true in substance and in fact concluded the matter. The Lord Chief Justice accepted this view in his judgment, in the course of which he observed that he had felt doubt as to whether he should withdraw the question of fair comment altogether from the jury. He said that nobody denied the sincerity, ability, or honesty of purpose of the plaintiff. On the findings of the jury there was no course open to him but to give judgment for the defendants.

It will be seen from the above that if upon appeal it should be held that Lord Hewart was wrong in holding expressions used by the defendant to be matters of fact and not of comment, very considerable argument may take place as to how far answer (3) should benefit the plaintiff in the face of answer (2). It is, we believe, accepted law that a person shall be liable for words found to be defamatory and not "fair comment" upon established facts. Equally there is good authority for holding that a finding that an alleged libel is "true in substance and in fact" is a conclusive answer to an action. There is, in short, an element of contradiction and uncertainty, the removal of which by the Court of Appeal or a higher tribunal may benefit future litigants, however costly and inconvenient the process may prove to those now involved.

CHILDREN BORN OUT OF WEDLOCK.

The principle involved in the Legitimacy Bill now under consideration in the House of Commons must receive universal approval. Its object is to legitimise illegitimate children whose parents marry either before or after the passing of the Act, and it was supported by members of each party. The Bill has been ably drafted by Mr. H. B. Betterton who introduced it, and although certain amendments may be made during the

Committee stages it is being sympathetically considered by the Government. Some of those Members of Parliament who have in recent years been responsible for the introduction of more comprehensive measures are inclined to consider it unduly narrow, since no provision is included for the more material side of the child's welfare. Another private measure which supplements the Legitimacy Bill in this respect is the Bastardy Bill, sponsored by Captain Bowyer, which provides for increase in the amount payable under an affiliation order, and the universal appointment of collecting officers. If these Bills run concurrently through both Houses at least some of the injustices under which the illegitimate child now suffers may be removed.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

District Health Scheme in Madras Presidency.

THE Madras Government has just issued an order reviewing a report of the district health officer, Vizagapatam, in connexion with the investigation of cholera in that district. The report was the first received by Government of the operations of the new district health staffs appointed in the districts, and therefore was considered worth publishing. The Government, in issuing orders based on the report, observed that the arrangements made for the distribution of water and medicine to the houses of those infected were admirable, and enabled the protective staff to localise and insulate the epidemic. The efforts of the health staff were reinforced in exemplary fashion by the presidents of the taluk boards and union boards affected, and by the active coöperation of the people themselves, notably volunteers who distributed medicines from house to house in the infected areas. These kept the staff in closest touch with the progress of the epidemic, enabling the district health officer to concentrate his staff exactly in the areas where it was most needed. The staff propaganda was enthusiastically seconded by presidents and members of local boards involved, and was appreciated by the villagers. The need for and utility of practical instruction in hygiene was fully vindicated. The district health officer drew a lurid picture of the squalor in which the labouring class of Parvatipur, among whom the epidemic first took root, live. Unless some permanent improvement in their environment can be effected these quarters will continue a menace to the health of the whole countryside. It is understood that the experimental scheme for district health staffs has worked successfully, and that the complete scheme will be introduced from April 1st, 1923.

Infant Mortality in India.

Bombay has recorded the highest mortality among infants under one year. Whereas in London, in 1921, the ratio of deaths of infants under one year was 80 per 1000, in Bombay the ratio was 666 per 1000 births. Figures contained in the annual report of the Director of Public Health of the United Provinces further emphasise the need for measures that will lead to the lessening of the toll that death takes of infant life. The statistics show that last year there was an increase in the already appalling infant mortality rate. In the district the average rate was 236·53 compared with 220·25 in the preceding year; in the municipal area the rate was 321·04 as against 303·24; while in 47 notified areas the rate was 283·84 as against 248·98. The rate in the urban areas was 314·27 and in the rural tracts 229·93, as compared with 300·02 and 213·83 respectively in 1920.

The Drug Habit in India.

An illicit traffic in the importation of morphia is flourishing at Indian ports. Already the Customs have seized 96 ounces of this drug, which, on being landed, commands a wholesale price of Rs.15 per ounce. The demand for morphia, especially in up-country places, is said to be increasing, and the retail price in the United Provinces and the Punjab is as much as Rs.80 an ounce. In the last five months 475 ounces of cocaine have fallen into the hands of the Customs preventive officers, as compared with 263 ounces in the whole of 1921–22.

Hospital Overlapping in Madras.

The Surgeon-General with the Government of Madras urges the need for a concentrated effort to coördinate medical activity in the Madras Presidency and recommends that a complete survey should be made of the hospitals and dispensaries in each district and their work reorganised in such a manner as to prevent overlapping. He pointed out that at present medical institutions were scattered about without any definite plan, with the result that in some towns there were hospitals owned by local boards and missionary bodies which kept up a perpetual rivalry. In one district there were 11 dispensaries, in one of which only 20 persons were treated for minor ailments. As some dispensaries do not provide sufficient work for the medical officers in charge, efforts are in future to be made to send medical relief from such dispensaries to surrounding areas and villages by closing them on certain days in the week and sending the medical officers on itinerant duty.

Insanitary Towns in the United Provinces.

At a recent meeting at Lucknow of the Board of Public Health in the United Provinces, several inspection reports by officers of the Public Health Department on the sanitary condition of towns in the Provinces were placed before the Board with notes of the action proposed to be taken by the municipal board concerned. In nearly every case the Board considered the action was inadequate and the reports on the Agra Municipality were forwarded to the Government with the remark that the Board of Public Health considered the inaction of the Agra Municipal Board unsatisfactory.

Medical Units of Auxiliary Force.

Steps have been taken to organise at Bombay and Madras medical units of the Auxiliary Force, including motor-ambulance convoy companies.

Madras, Feb. 1st.

CZECHO-SLOVAKIA.

(FROM OUR OWN CORRESPONDENT.)

National Tuberculosis Congress.

A NATIONAL congress for research in tuberculosis will be held in Prague from May 19th to 21st. Organised by the Czech Association for the Promotion of Research in Tuberculosis, of which Prof. Ivan Honl is chairman. The congress will comprise three sections. The first section will consider theoretical and clinical questions, the second will be devoted to public health, and the third will deal with tuberculosis in veterinary medicine. At the same time an exhibition will be held at which all Czecho-Slovak anti-tuberculosis organisations will demonstrate their activities. Papers will be read by tuberculosis workers who hold scholarships given by the Czech Association. Foreign associations have not been officially invited to the congress, but foreign guests will be made welcome, in accordance with a resolution passed by the organising committee. Intention to attend should be communicated to the Secretariat of the Congress, Vladislavova 14, Prague.

National Council of Social Hygiene.

The National Council of Social Hygiene, a federation of nine private associations dealing with public health, held the sixth session of the delegates on Feb. 7th. At the meeting Dr. Alice G. Masaryk, daughter of the President of the Republic, was re-elected chairman of the Council. Prof. Selskar M. Gunn, of the Rockefeller Foundation, who formerly held the post of technical advisor to the Ministry of Health at Prague, stated in an address that the creation of the Council led to the organisation of a similar institution in

Belgium and Finland, and that the League of Red Cross Societies included in its programme the initiation of similar councils in other countries. A report was presented relating to the common effort to raise funds which will be undertaken by the constituent associations during the spring. A building to include the offices of all these associations is projected; the financial side is provided for, and only technical elaboration is now required before the scheme is carried forward. A committee was appointed to take charge of a scheme propounded and carried by the Czecho-Slovak Red Cross, whereby a coöperative demonstration of model social and public health work will be undertaken by the constituent associations of the Council in the district of Kladno; there the different associations will work out their respective relationship in the details of field work, and all classes of public health personnel will be trained in practical field experience. The district has a population of 81,034 inhabitants according to the census of 1921, and contains two industrial towns with a combined population of 29,476; the rest of the district is rural, and it was selected for the experiment because of these mixed features. The Ministries of Public Health and Social Welfare have been invited to participate in the undertaking. A smaller demonstration of local work will be conducted simultaneously by the Czecho-Slovak Red Cross in the community of Lány, where is the summer residence of the President of the Republic.

The Wet-Nurse as a Mother.

A Bill was recently introduced in Parliament by Deputy Dr. Ivan Hálek to restrict the employment of any wet-nurse to the detriment of the latter's own child. A common practice has been that a poor mother accepted the position of a wet-nurse in a rich family, while her own child was entrusted to the care of relatives—a proceeding which naturally entailed artificial feeding of the child. The proposed Bill would permit the hiring of a wet-nurse only on condition that her own child is nursed by her simultaneously with the child of her employers. Wet-nurses willing to nurse for hire are usually of strong physique and have milk enough for two children; moreover, it is anticipated that a mother who does not want to nurse a child because she can hire a wet-nurse may not care to take into her home a nurse with a child of her own, and will therefore prefer to nurse the child herself. Where a mother cannot nurse her child, and does not want to hire a nurse with a child, she will probably feed her own child artificially under conditions more hygienic than those attainable by the relatives of the poor child whose mother has become a wet-nurse. From the eugenic standpoint it is more likely that the child of a strong mother will develop into a healthy individual than the child of a mother unable to nurse it, and the Bill is aimed at restriction of "immoral commerce" in mothers' milk; it is felt that a reduction of infant mortality should result from giving the child of poor parents the benefit of its own mother's milk rather than from helping the weaker offspring of wealthy parents to the detriment of the stronger child.

PLUMBO-SOLVENT WATER AT BACUP.—An inquiry held in Bacup on Feb. 27th by inspectors of the Ministry of Health revealed the fact that the water supplied by the Bacup Corporation to the Rochdale Corporation contained lead in dangerous quantities. Samples were taken at houses of water which had stood in the pipes all night. Analysis of the water supplied in Bacup itself in almost all cases gave similar results. The reason assigned for the plumbo-solvent action of the water was the presence of peaty acids due to the nature of the collecting areas. It was considered that the only efficient remedy was mechanical filtration of the water at its sources. It is proposed to instal at the reservoirs four Bell's patent mechanical filters, at a cost of £16,000, to remove peat and suspended matter, as well as the plumbo-solvency. It was recalled at the inquiry that in 1887 there was a serious outbreak of lead poisoning at Bacup, when several deaths occurred and 600 cases were treated.

Public Health Services.

THE SCHOOL MEDICAL SERVICE AND THE STUDENT.

THE professor of medicine at the University of Aberdeen is to be congratulated on his enterprise in including in the curriculum for fifth-year medical students certain lectures by the school medical officer, Dr. George Rose, on school medical inspection and treatment with their bearing on medical practice. During the last session visits were paid to special schools and clinics and attendance at the lectures was large and the interest keen. It is to be hoped that the practice will spread so that the medical student will be enabled to take advantage of the vast field of pediatrics open to him in this direction. There are doctors throughout the country who have never seen a school medical inspection, a school treatment centre, or even one of the various types of special schools. As was noted recently in our columns, at Liverpool work at the schools and at dental centres is included in the university dental curriculum.

QUARANTINE PERIOD FOR MEASLES.

The new Board of Health regulations for New York lays down that children and teachers with measles are excluded from school but are permitted to return five days after the appearance of the rash, provided the rash and all catarrhal discharges have disappeared. Those who have not had measles are excluded until 14 days after the date of their last exposure.

PUBLIC HEALTH IN THE CITY OF CAPE TOWN.

WE recently reviewed[1] Dr. J. A. Mitchell's survey of public health in the Union of South Africa contained in an address to the recent Johannesburg Congress. Dr. Mitchell then challenged the medical profession to say what it was doing about the matter. We have now received from Dr. Jasper Anderson, the medical officer of health of Cape Town, a copy of his annual health report for the year ending June 30th, 1922. It is an interesting document, giving as it does the vital statistics of a European and non-European community living side by side and enabling a comparison to be made between the health conditions of either community and those of the average English town. Dr. Anderson mentions that the general death-rate and the infant mortality for both communities are the lowest ever recorded and that this result has been achieved in spite of overcrowding and scarcity of house accommodation. The following table gives some of the principal statistics for the Europeans and non-Europeans separately:—

—	Estimated population for mid-year 1921–22	Birth-rate.	Death-rates per 1000 of population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Infant mortality.	Diarrhœa, &c., under 5 years.	Maternal mortality from childbirth.
Europeans	103,520	24·2	11·9	1·0	0·88	1·7	69	13	4·0
Non-Europeans	82,530	51·6	27·5	3·7	0·52	7·6	176	30	3·8

The general death-rates when corrected for visitors become 10·6 and 26·2 respectively. The rates for the European community compare favourably with an English town, especially that for cancer. Among non-Europeans the most noteworthy features are the high birth-rate, the high death-rates from tubercle,

[1] THE LANCET, Jan. 6th, p. 48.

respiratory diseases, and among infants, and the low death-rate from cancer. The child-birth mortality is slightly lower for the non-Europeans and much on a level with an English town. As regards diarrhœal diseases, only three deaths from dysentery were recorded, and taking into consideration temperature conditions, the death-rates appear to be comparatively favourable. There may be some difference in classification, but even when diseases of the stomach are added to diarrhœa and enteritis, the death-rates per 1000 births only become 30 and 67 for Europeans and non-Europeans respectively.

The total hours of bright sunshine were 2801 and are to be compared with a 15 years' average of 2980. The rainfall was 24·15 inches, the 15 years' average being 22·19 inches. The range of the four-foot earth thermometer was from 56·8° to 69·1° F., as compared with an average range for 15 years of 56·8° to 81·4° in the shade. The mean of the maximum thermometer for the year was 70·85° (15 years' average, 70·56), and of the minimum 52·03° (15 years' average, 53·85). The highest shade temperature recorded was 99·3° on April 4th, the highest during the previous 15 years being 102·5° on April 21st, 1918.

Enteric fever was most prevalent from January to May and caused a death-rate of 0·26 per 1000 among Europeans, and of 0·56 among non-Europeans. For the previous year these rates were 0·42 and 0·63 respectively—enormous figures, as Dr. A. W. Reid, the assistant medical officer of health says, compared with present English rates. One could, however, have matched them in some English towns in the last decade of the nineteenth century. The death-rate from diphtheria was high—viz., 0·86 for Europeans and 0·72 for non-Europeans. The maternity and child welfare work was directed by Dr. Mary Van Ingen. There are five bureaus for infant consultations and a staff of 10 sanitary inspectresses, and a chief inspectress. Of 6905 notified births, 5796 were notified by midwives, 1098 by parents, and 11 by doctors. Patients considered suitable have tuberculin treatment at the city hospital and continue the treatment after discharge at the tuberculosis bureau, which is also used for consultation purposes. Dr. W. P. Cooney conducts the municipal V.D. clinic and finds much difficulty in getting the more illiterate patients to take the treatment seriously. Dr. Reid gives a very favourable report of the 108 dairy-farms outside the city, which supply Cape Town with milk. For example, the stables and utensils are clean, the milkers wash their hands before milking, and coolers are in general use.

Progress is being made with the extension of the water-carriage system. Extermination of rats and mosquitoes receives continuous attention. There were no deaths attributed to malaria last year.

Obituary.

PETER CALDWELL SMITH, C.B.E., M.D., C.M. GLASG., D.P.H. CAMB.,

MEDICAL OFFICER OF HEALTH FOR WANDSWORTH.

THE Public Health Service, both civil and military, has sustained a severe loss through the death on Feb. 21st of Dr. P. Caldwell Smith, who had for many years taken a prominent part in London civic life as medical officer of health of the metropolitan borough of Wandsworth, and did valuable work during the war in the medical service of the Territorial Force.

Dr. Caldwell Smith was born at Uddingston, Lanarkshire, in 1858, the son of the late Mr. James Smith, LL.D., J.P. He was educated at Glasgow University, where he took the degrees of M.A. in 1878, M.B., C.M. (with commendation) in 1881, and M.D. in 1884, and in 1888 he took the D.P.H. Camb. He started practice in Motherwell, Lanarkshire, and was lecturer in public health in Anderson's College, Glasgow, from 1890 to 1893. He afterwards proceeded to Wandsworth, being appointed medical officer of health of the parish in 1894. He remained in private practice until 1901, when he was appointed full-time medical officer of health of the borough of Wandsworth. To Dr. Caldwell Smith Wandsworth owes many sanitary improvements of which it stood sadly in need. He interested himself specially in the abolition of slum areas and in the prevention and cure of tuberculosis. During his term of office the infant mortality rates were lowered in a marked degree. In 1901 the infant death-rate was 133 per 1000, while 20 years later it dropped to 67 per 1000. Dr. Caldwell Smith joined the Territorial Force soon after its inception, and was appointed Captain to the 2nd London Sanitary Company in 1909, shortly afterwards taking command of the company with the rank of Major. He was mobilised in August, 1914, and later acted as Medical Inspector of Recruits, Territorial Forces, London District. He became Lieutenant-Colonel in 1915, and was President of the Travelling Medical Board, London Division, from 1916 to 1918. In recognition of his military services he was twice mentioned in despatches and received the decoration of C.B.E. (military). He was the author of numerous contributions to the medical press on public health subjects, and was for a time editor of the *Sanitary Journal*. In recent years he had taken great interest in maternity and child welfare work in Wandsworth, and particularly in the Wandsworth War Memorial Maternity Home, which represented his most recent achievement. He was a past president of the metropolitan branch of the Society of Medical Officers of Health.

Dr. Caldwell Smith had held his office at Wandsworth for 22 years, and was expecting to retire in the course of the present year. He was seized suddenly with cerebral hæmorrhage while travelling from his office after his ordinary morning's work, and was taken to the West London Hospital where he died after 12 hours without regaining consciousness. The funeral took place on Feb. 27th at the Putney Vale Cemetery after a service at St. John's Church, Putney, and was attended by the Mayor of Wandsworth, representatives of the corporation and officials, local medical men, and representatives of the Society of Medical Officers of Health, and the Public Health Department of the London County Council.

Dr. Caldwell Smith married Ina, daughter of Mr. J. S. Macdonald, J.P., and of their two sons, the younger, Dr. E. L. Caldwell-Smith, is in practice in London.

THE LATE DR. L. D. H. RUSSELL.—Logan Dillon Hooper Russell, who died on Feb. 13th at the age of 72, received his medical education at University College, London, and qualified in 1870 with the M.R.C.S. Eng. He then went abroad, and after travelling for several years returned to England and took the F.R.C.S. Edin. Again leaving England he went to Canada and the United States, and in 1884 obtained the M.D. Vermont. Part of his time was spent in the West Indies, where he acted as a justice of the peace. He had also been medical officer of health for the Port of Bonny, West Africa, and chief surgeon to the native forces there. On his return to this country he held several important hospital appointments and subsequently settled in practice in Liverpool.

THE LATE DR. IAN DALRYMPLE CLARK HOWDEN.—Dr. Ian Howden, consulting surgeon and radiologist to the Royal Victoria Hospital, Dover, whose death has been recently announced, was a well-known and popular practitioner, connected with Dover for over 26 years. Receiving his medical education at St. Bartholomew's Hospital and at the University of Edinburgh, he graduated M.B., C.M. in 1895, proceeded to the M.D. degree two years later, and took the F.R.C.S. Edin. in 1908. During the war he served first in France in the R.A.M.C., and afterwards, with the rank of lieutenant-commander, R.N.V.R., directed the search-light service in Dover. He was lecturer in physiology to the Technical School, Dover, hon. surgeon to the Dover Ambulance Brigade, and medical officer to Dover College, as well as a member of the Kent County Council. His devotion to duty and kindly nature endeared him to a wide circle of friends and patients.

Correspondence.

"Audi alteram partem."

DEATHS AFTER OPERATIONS.

To the Editor of THE LANCET.

SIR,—The custom of holding coroner's inquests upon patients who have died on the table while under anæsthetics does not in any way add to the safety of the public, and frequently inflicts grave injustice upon the practitioner concerned. This is surely bad enough, but a development has now arisen which bids fair to make the task of the anæsthetist more trying and thankless than ever. In the daily press recently there were reports of an inquest held in London upon a child, who had died from "delayed chloroform poisoning," and we read that the coroner suggested to the anæsthetist that his judgment had been at fault in selecting chloroform in a toxic case.

It is difficult to foresee where this kind of inquisition is going to end. If it is considered necessary to hold inquests on patients who die several days after an operation, why limit it to any particular type of complication? Why not hold inquests upon all such cases of death and let the coroner summon the surgeon to justify his methods and technique? Could anything be more absurd than to hold a public inquiry into a death from acidosis, and accept a death certificate for an equally accidental complication such as pulmonary embolism? If a patient dies of septic poisoning the practitioner in attendance is not summoned to explain why he administered this or that kind of vaccine, and it is preposterous that anæsthetists should be called upon to justify their choice of drug or method of administration to a court composed of people entirely ignorant of the subject; the public who read these reports in the daily papers do not appreciate the fact that the coroner's knowledge of the subject is quite superficial, and they naturally assume, if he questions the anæsthetist's judgment, that the latter is in some degree to be blamed.

In every other branch of practice it is rightly recognised by the legislature that the doctor has done his utmost to save his patient's life—why then should any distinction be made because death has occurred after the administration of an anæsthetic? In his recently published book on anæsthetics Dr. J. Blomfield quotes Mr. Justice Walton as having said: "The science of surgery would soon relapse into a retrograde condition if surgeons were called upon to justify in public every detail of their operation; but it would appear that at present coroners think it their duty to put upon the rack of publicity only the unhappy anæsthetist." How much worse will be the lot of the "unhappy anæsthetist" if this inquisition is to be extended to fatalities which occur some time after the operation!

If, as Sir Bernard Spilsbury is reported to have stated at this inquest, the subject of deaths under anæsthetics is under the consideration of the Ministry of Health, it would seem to be a very favourable opportunity for the medical profession to endeavour to bring about a change in the present arrangements, which create alarm in the public mind, and are grossly unfair to anæsthetists.

I am, Sir, yours faithfully,

J. HENRY CHALDECOTT,

Feb. 28th. Senior Anæsthetist to St. Mary's Hospital.

L'AFFAIRE SPAHLINGER.

To the Editor of THE LANCET.

SIR,—As one reads, in your issue of March 3rd, the views of three sincerely convinced disciples of M. Spahlinger, one experiences the sensation of being carried away by the enthusiasm of others. A sentence, however, in the obituary notice of the late Prof. Saugman on p. 462 of the same issue brings one back to a more critical frame of mind. Saugman suffered in early adult life from pulmonary tuberculosis and, to quote the notice referred to, "he underwent sanatorium treatment at Dr. Brehmer's Institute in Görbersdorf and, though the disease, even at this stage, was severe and advanced, it was arrested, and he returned to Denmark to take up general practice." His life of unremitting work from 1895 until his death last month, after an operation for gall-stones, shows how surely Nature can limit and inactivate even advanced tuberculous lesions in certain cases. A glance at a paper by Joseph Walsh in the January number of the *American Review of Tuberculosis*, embodying the conclusions formed on "an analysis of 500 necropsies performed or observed" tells the same story. With such facts before us, how can we venture to accept, as evidence for the Spahlinger treatment, the beneficial results that have been noted in the few cases cited by your correspondents? May I suggest, without attempting to make any reflection on the utility of M. Spahlinger's numerous preparations, that the medical profession is still uninformed on certain important points: How are the remedies prepared? How are they standardised? How many cases, and at what clinical stage, have been treated, and for how long have they been observed? How many are now "well and at work," "improved," "stationary," "worse," and "dead"?

It is possible that M. Spahlinger's preparations, or some of them, may yet be proved to be of great value, and if so, he will have conferred a benefit on humanity. But the matter is urgent and time is being lost. What a pity that he does not follow the example of Pasteur, a non-medical scientist, who laid the foundation of modern medicine, by publishing exact details of his methods in order that they may be confirmed by other workers. This would help matters more than the building of an institute for the production of what is, after all, still a "secret remedy."

I am, Sir, yours faithfully,

S. LYLE CUMMINS.

Welsh National School of Medicine, Cardiff, March 3rd, 1923.

To the Editor of THE LANCET.

SIR,—I should like to say a word in support of what appears in the letter of Dr. Leonard Williams concerning the Spahlinger treatment of tuberculosis. I have seen enough of the results of that treatment, both here and in Geneva, to satisfy me that a prima facie case has been made out; I am most anxious to obtain further supplies of this remedy, and am prepared to support any scheme by which such supplies can be made available for suffering humanity.

I am, Sir, yours faithfully,

BRUCE BRUCE-PORTER.

Grosvenor-street, London, W., March 3rd, 1923.

To the Editor of THE LANCET.

SIR,—As one of the doctors responsible for drawing up the memorandum with regard to this matter, I thank you for your leading article on the subject. May I be allowed to emphasise one fact, which is mainly responsible for the present position? When the war broke out Mr. Spahlinger, who is a Swiss, placed his time and resources at the service of the Allies and set aside his life's aim—the discovery of a cure for consumption—in order to prepare anti-tetanic serum for the Russian Government. For this work he received not even his out-of-pocket expenses; so that the end of the war found him with greatly diminished resources and his anti-tuberculosis work much in arrear. Now his full supplies of sera and vaccine are very short and the very existence of his laboratory is threatened.

I visited the laboratory last September and was shown over it by Mr. Spahlinger. I saw the complete and original outfit with its automatic checks and safeguards and the beautiful horses and other animals, so well kept and cared for as to be a delight to an English visitor. I also examined many cases, both cured and still under treatment with charts and skiagraphs, and convinced myself that the results,

which Mr. Spahlinger has obtained, far exceed anything achieved before in the treatment of advanced tuberculosis. I greatly hope that it will be possible to carry out the course which you advise; for up to now we doctors stand helpless when faced by an advanced case of phthisis, and Mr. Spahlinger, who has never taken one penny for his work or his remedies, is faced by a set-back of five years at least in reaching his goal. This situation is, as you say, "supremely tragic." I am, Sir, yours faithfully,

PH. NAPIER JONES.

Crowthorne, Berks, March 5th, 1923.

To the Editor of THE LANCET.

SIR,—The enclosure is a note which I prepared for Prof. d'Arsonval's publication in 1921. Since then I have every reason to be still more impressed with the results of Mr. Spahlinger's work, and I am distressed to find that his financial embarrassment is such as may result in a calamity disastrous to the thousands of sufferers who are anxiously awaiting his remedies. I sincerely hope that your valuable influence may help to get Mr. Sphalinger out of his difficult position.

I am, Sir, yours faithfully,

A. H. CROUCHER, M.D., F.R.C.S. Edin.

Eastbourne, March 4th, 1923.

[ENCLOSURE.]

"Being the first doctor to apply Spahlinger's method for the treatment of pulmonary tuberculosis in 1913, I desire to state that all the cases that I know, treated and vaccinated, six years ago, are still alive at the end of 1920, capable of carrying on uninterruptedly their daily occupations in a normal manner. All these patients were in 1913 affected with advanced pulmonary tuberculosis, and two of them had laryngeal complications due to Koch's bacilli. My clinical observations will be published in the report which will be devoted to detailed hospital work. The object of this note is to demonstrate the efficacy of Spahlinger's anti-tubercular vaccination, thanks to which the patient is put in a state to create himself an anti-tubercular immunity strong enough to allow him to cure his lesions, and to combat by his own organism the subsequent attacks of Koch's bacilli.

It is to the admirable effects of this vaccination that we owe the absence of any relapse of the cases cured and vaccinated in 1913 and 1914. A. H. C."

THE ÆTIOLOGY AND OPERATIVE TREATMENT OF HALLUX VALGUS.

To the Editor of THE LANCET.

SIR,—The annotation in your issue of last week on this subject is of considerable interest to orthopædic surgeons, and I should like, with your permission, to state my agreement with the main conclusions reached by Dr. Torsten Sandelin, of Helsingfors. Owing to the absurd but almost universal habit among women of wearing narrow-pointed shoes, hallux valgus is very common indeed; so much so, that, as pointed out in your pages some years ago,[1] it has been considered as the normal condition by some artists and sculptors and even by anatomists. But this deformity, however unsightly, gives rise to few or no symptoms in the majority of cases, even when the deviation of the phalanges outwards amounts to as much as 30 degrees. It seems that it is only when the distorted joint is attacked by arthritis that pain is felt. This is generally of a degenerative and chronic type and results in thinning of the cartilages and hypertrophy of bone, and the most extreme cases of deformity are found in the subjects of rheumatoid arthritis, in some of which abduction to a right angle may be noted. When chronic arthritis has been set up, all treatment other than by operation is only palliative.

My experience entirely bears out Dr. Sandelin's conclusion that excision of the head of the metatarsal bone is the operation to be preferred. After trying lesser or more elaborate methods this is the proceeding which has given me the best results. If the whole of the head and a small portion of the neck of the bone is removed there need be no fear of subsequent stiffness. I have found that the chain saw is a great help to rapidity and neatness, and that it is far superior for the purpose to the wire saw known by the name of Gigli. It is only necessary to keep the toe well flexed during healing, so as to obviate contraction of the extensors. This small operation need not take 15 minutes in its performance, and seems to me to be in its functional results one of the most satisfactory of the minor operations on the skeleton. Incidentally, Dr. Sandelin refers to the transverse arch of the foot formed by the heads of the metatarsal bones. While I am aware that surgeons generally, and perhaps some anatomists, speak of such an arch, I have yet to meet any evidence of its existence in the weight-bearing foot; and in all humility I would ask my confrères to produce such evidence, if they think that they possess it.

The results of the operation in question form a strong argument against the existence of the arch. If it were a reality, the removal of its internal and most massive pier would surely produce some serious disturbance of the stability of the front of the foot, but experience has shown that no such evil result follows excision. On the other hand, the researches of Beely and of Momburg[2] have conclusively proved that the heads of the second and third metatarsal bones are the principal weight bearers of the front part of the foot, and that so far from there being an anterior arch convex above, the curve formed by the line of the metatarsal heads is convex below, when weight is borne by this part of the foot. I am, Sir, yours faithfully,

E. MUIRHEAD LITTLE.

Seymour-street, Marble Arch, W., March 5th, 1923.

[1] Boots and Shoes from Historical and Surgical Points of View, THE LANCET, June 20th, 1914, p. 1738.

[2] See Beely, quoted by Momburg in Der Gang des Menschen und die Fussgeschwulst, Berlin, 1920.

ALCOHOL AND INSANITY.

To the Editor of THE LANCET.

SIR,—Dr. Stanley Wyard's argument, in his letter under this heading in THE LANCET of Feb. 24th, is somewhat difficult to follow. He agrees with the conclusion that alcohol is not an important cause of insanity, but he denies that this conclusion is confirmed by the fact that the enormous reduction of alcoholism during the war was not accompanied by any decrease of insanity. And the reason he gives for refusing any evidential value to this statistical observation is that "other causes of insanity" must be presumed to have been operative during that period to such an increased degree as would have sufficed to counterbalance the effect of the virtual elimination of alcoholism, even if alcoholism had really been the chief factor in the production of mental disease. But surely, if alcoholism is a negligible factor, as Dr. Wyard admits, and if these other alleged causes of insanity, to which he attributes such potency, were active "to a very much greater degree than in pre-war days," there should have been a substantial increase of insanity, and not merely a stationary rate. And what are these other factors of insanity which have been so greatly increased in activity during the war? If Dr. Wyard can identify them and give proof of their causal influence, he is clearly in possession of evidence regarding the ætiology of mental disease which has hitherto been quite unknown to psychiatry.

I am, Sir, yours faithfully,

W. C. SULLIVAN.

Broadmoor State Asylum, Berks, Feb. 25th, 1923.

THE SUSSEX PROVIDENT SCHEME.

To the Editor of THE LANCET.

SIR,—Since you first drew attention to the Sussex Provident Scheme, a little over two years ago, a number of similar contributory schemes have been established all over the country, and it may interest some of your readers who are connected with the other organisations to learn how the Sussex scheme has fared during the past year.

The Group Scheme started on April 1st last year has proved a great success. The number of coöperating hospitals has increased from 9 to 11, but the

administration remains in the same hands of a neutral body not connected with any particular hospital, and not seeking representation upon the boards of management of the hospitals. The membership—i.e., 4200 subscribers—and those of their dependents who are beneficiaries under the scheme amounts now to over 10,000, and is rapidly increasing. Although in two cases during the year we have had to pay a hospital over £60 for one member, we have been able to pay every coöperating hospital in full the out-of-pocket cost of their services to our members, based upon the average cost of such services in the year 1921, with the result that since the scheme has been in existence none of our members has depleted the charitable funds of any of the coöperating hospitals of one penny.

With regard to the hospitals not coöperating with us, we are unable to deal direct, and can only repay our members such charges as may have been made to them, but our coöperating hospitals have agreed that when presenting themselves for treatment with their card of membership, and a letter of recommendation from their private doctor, our members shall not be subjected to any almoners inquiry as to their means or asked for any contribution for their maintenance or treatment while attending the hospital, the bill being subsequently sent to the committee of the scheme by the hospital for payment.

We have sustained a great loss in the death of Viscount Selby, who was our honorary secretary, and to whose disinterested service the success of the scheme is mainly due.

I enclose the balance-sheet of the year's working.

I am, Sir, yours faithfully,

P. A. S. CRAWLEY,
Major; Chairman, Sussex Provident Scheme.

Sussex Provident Scheme for Hospital and Specialised Medical Services, 4, St. George's-place, Brighton, Feb. 26th, 1923.

[ENCLOSURE.]

The Sussex Provident Scheme for Hospital and Specialised Medical Services.

Jan. 1st to Dec. 25th, 1922.

RECEIPTS.

(a) Individual Scheme.

	£	s.	d.	£	s.	d.
Brought forward from 1921				54	12	5
Subscriptions.						
205 @ 20/-	205	0	0			
88 @ 30/-	132	0	0			
42 @ 40/-	84	0	0			
	421	0	0			
Less						
¼ of 30/- sub. refunded	£1	2	6			
½ ,, 20/- ,, ,,	10	0				
	1	12	6			
				419	7	6
Interest on Deposit Account				1	18	10

(b) Group Scheme.

Kemp Town Brewery	56	8	0			
Brighton Corp. Waterworks	33	12	0			
Allen West and Co., Ltd.	523	4	0			
Tamplin and Son, Ltd.	99	0	0			
Brighton and Hove Gen. Gas Coy.	309	17	0			
Sons of Temperance (Brighton)	16	3	0			
Do. (Perseverance)	2	12	0			
L.B. and S.C. Rly.:—						
Millwrights	30	3	0			
Running Shed	51	18	0			
District Engineers	38	11	0			
Goods Dept.	19	8	0			
Stores Dept.	3	12	0			
Field and Cox	5	2	0			
Rock Brewery, Ltd.	21	2	0			
R. Fry and Co., Ltd.	16	7	0			
Thos. Tilling, Ltd.	9	3	0			
Brighton Corp. Tramways	4	10	0			
Anchor Brewery	6	16	0			
J. Eede, Butt and Son	21	18	0			
Brighton Corp. Works Dept.	21	17	0			
Union of P.O. Workers	30	0	0			
Co. Borough, Brighton Police	104	8	0			
Brighton Police Pensioners	42	0	0			
Kidd and Hotblack	32	8	0			
Brighton Corp. Electricity Dept.		11	0			
Reynolds and Co.		14	0			
				1501	4	0
Interest on Deposit Account				7	10	7
				£1984	13	4

EXPENDITURE.

Payments to Hospitals.

	£	s.	d.	£	s.	d.
Royal Sussex Co. Hosp.	628	10	4			
Royal Alexandra Hosp. for Children	169	10	0			
New Sussex Hosp. for Women and Children	20	17	0			
Brighton, Hove and Preston Dispensary	125	6	0			
Sussex Eye Hospital	27	17	2			
Brighton and Hove Hosp. for Women	13	4	0			
Stephen Ralli Memorial Laboratory	12	2	6			
Brighton and Hove Provident Dental Hosp.	13	10	0			
				1010	17	0
Other Payments.						
Five Consultations	15	15	0			
Queen's Nurses	29	14	0			
Ambulances (British Red Cross)	9	18	0			
				55	7	0
Administration.						
Printing	45	16	0			
Advertising	33	10	0			
Postage	8	0	2			
Telephone Calls	2	16	8			
Use of Offices, &c.	69	3	0			
				159	5	10
Sundries				4	13	6
Subscriptions paid in advance for 1923				654	14	0
Balance carried forward				99	16	0
				£1984	13	4

We certify that we have examined the above account with the bank pass-book and vouchers and find the same to be correct in accordance therewith.

(Sgd.) E. C. BALDWIN AND SON,
Jan. 24th, 1923. Chartered Accountants, Auditors.

*** We publish this balance-sheet that the details of a new movement may be clear to those interested. It should be added that the Group Scheme has only been in existence for nine months, and we understand that its principal progress has been made during the last four months.—ED. L.

THE DISPENSING OF PRESCRIPTIONS.

To the Editor of THE LANCET.

SIR,—I regret exceedingly that Dr. G. Clark Trotter should have felt impelled to write the letter published in his name in your issue of Feb. 24th. The damage done to the reputation of thousands of unoffending pharmacists does not appear to have concerned him in the least. Pharmacists are not responsible for any of the attacks made upon doctors, why therefore, should that be given as a reason for this attack upon pharmacists? I do not defend carelessness on the part of a chemist, but I feel sure that even in Islington, if the true circumstances are known, the proprietors of these pharmacies are not as bad as Dr. Trotter would have everybody think they are, and I am certain that the general standard of accuracy in dispensing is satisfactory throughout pharmacy.

My organisation, through the Pharmaceutical Committee, has been, and is, coöperating with the authorities in securing the highest possible standard for insurance prescriptions. It needs no newspaper stunts to make us appreciate the value of accuracy in dispensing, and we hope that Dr. Trotter will give us credit for trying to be as conscientious as doctors (and he will probably agree that no higher standard need be used). A little more coöperation between medical men and pharmacists would be a great help in securing better fulfilment of the doctors' wishes in regard to their prescriptions. Where that coöperation exists, I have never met with any suggestion that the pharmacist does not do his work properly.

I am, Sir, yours faithfully,

G. A. MALLINSON,
Secretary, the Retail Pharmacists' Union.

19, Tavistock-square, W.C., Feb. 28th, 1923.

RHINO-LARYNGOLOGY.

To the Editor of THE LANCET.

SIR,—In forwarding you a brief note (THE LANCET, Sept. 23rd, 1922) on the treatment of Highmore's antrum I had no intention of precipitating an academic discussion on the subject.

In reply to Sir James Dundas-Grant in your issue of Sept. 30th last, I must first thank him for his pleasant

reference to any humble part I may have taken in the work of the specialty in past years. Pace Sir James Dundas-Grant, however, there are some serious objections to procedures detailed in his letter referred to. Mickulicz opening (1886) through the inferior meatus affords imperfect facilities for examining the interior of the antrum and cannot be depended upon for satisfactory drainage. Again, septal spurs defluxions and narrow nares are frequent. Apart from this, two openings are prescribed which upset the acoustic properties of the antrum and might easily lead to a defect in articulation similar to that in cleft palate. If the alveolus is absorbed then there is quite a large pocket left undrained by this meatal opening. Besides, the floor of the antrum generally is below the meatal floor level. Then there is the unfortunate drainage of a suppurating cavity into the nose, postnasum, Eustachian tubes, and possibly to droplet infection into larynx, trachea, and lungs—the fan-like exhaust action in respiration aiding and abetting the evil. Without operation at all, these structures for the most part are irritated in antral disease after an operation by the other route, canine, though irritation promptly disappears.

The simplest procedure in antral disease would seem to be, then, a small trephine opening under cocaine in the canine fossa, free irrigation with the use of bipp (diluted), and watch progress; and if this is retarded then enlarge opening, especially in the presence of ozæna and recurrent polypi. After experience, I have noticed one or two patients who demurred to allowing the opening to close because the daily douching seemed to be so refreshing. Here we have a clue to treatment. In such a large cavity, however, infected massive production of toxin must occur. These patients invariably look septic and rapidly regain health after this simple operation.

I am, Sir, yours faithfully,

Mossel Bay, South Africa. W. ROBERTSON, M.D.

*** Sir James Dundas-Grant writes with reference to the above letter that he is sure his old friend, Dr. Robertson, will find that the objections he raises will quite lose their validity if he gives the operation recommended a trial.—ED. L.

WOMEN IN THE POST OFFICE MEDICAL DEPARTMENT.

To the Editor of THE LANCET.

SIR,—I shall be glad if you will allow me a short space in which to deal with the statements in the memorandum issued by the Federation of Medical Women on the above subject, and published in the issue of your journal of Feb. 24th. It is an axiom that women cheapen labour. The entrance of women into the above department fully bears this out. When a woman M.O. was first appointed in 1882, £150 was taken from the salary of one of the men's appointments and given to her. Neither this sum nor its equivalent has ever been restored to that appointment. Though the bulk of work and responsibility have enormously increased with the growth of the service, the salary is less than it was 42 years ago. Whenever the men in the medical department apply for an improvement in their conditions of service or salary their applications are rejected, one reason being that the women would also expect to partake of any benefit and thus add to the total cost of the concession. The reduction of salary mentioned above involved a reduction of the minimum of that scale, and thus not only affected that particular appointment, but also that of the assistant M.O., as the maximum of his salary could not overlap the minimum of his senior. In one case a man remained 14 years at the maximum of his salary and the Post Office could not grant him any increase.

Worse than the immediate effect on the salary is the ultimate effect on the pension. In the above instances two families were made to live in straitened circumstances in order that a single woman might live in purple. As an indication of the discontent of the women with the conditions of the service it is stated that in 41 years one woman has resigned from the medical staff. Surely no more admirable testimony could be presented to the Postmaster-General as to the attractiveness and comfort of the employment on the women's side of the medical department. It is stated that the men and women are appointed under the same conditions. This is far from being the case. A woman can be appointed as soon as she receives any qualification, at 21 years of age. The woman last appointed was 22. No man is appointed who has not a good qualification, a degree being essential, who has not been a resident M.O. in a large general hospital, and who has not served in the war. In other words, a woman obtains her appointment near 21 years of age without any condition, whilst conditions are imposed upon the men which bring them within range of 30 years of age or over before they are accepted. The claim that the men and women should receive equal pay is ridiculous. At the present time not one of the women has held a resident appointment in a large general hospital, whilst amongst the men there is not one who has not held such a position.

The Postmaster-General naturally pays the women the value of the service they give and not the value of the service given by the men. The Post Office is only a business. Nor will the claim that the women do the same kind of work as the men hold water. There is not a woman on the medical staff at the present moment qualified by knowledge or experience to perform the work of the second M.O. Yet this duty has to be taken up by the men at any moment. Before the demolition of the factory buildings, stores, engineering works at Mount Pleasant, the M.O. to that area had to attend, on an average, 360 accidents of all kinds and degrees, with an abundance of other complicated work, during the course of the year. No woman could possibly perform this duty, nor is there a similar duty under their care. All claims for injuries against the P.O., workmen's compensation cases, visiting provincial offices, examination of special cases of industrial diseases are taken by the men. There is no compulsory qualifying examination for the position of M.O. to the P.O., so that the staff can scarcely be said to "pass the same examination." None of the women, for instance, has obtained a diploma in public health, nor can it be said that a woman with the L.R.C.P. Edin., L.R.F.P.S. Glasg. has passed the same examination as a man with the M.D. Lond, M.D. Camb., &c.

The statement regarding salaries is a farago of nonsense. When the present female M.O. (there is no such appointment as senior female M.O.) was appointed, her scale was £200–£300. The impression is given that this scale was paid to male and female assistant M.O.'s up to 1911. As a matter of fact, the man assistant M.O. who entered the service in 1889 was receiving in 1897 a higher salary than £300 a year. In 1900 he was receiving £400 a year, and in 1906 £450. As previously stated, the P.O. pays salaries according to the value of the work performed, if circumstances permit of this being done. A low initial salary is fixed, for obvious reasons, until the individual has shown ability or otherwise. In the former case the service has its attractions, and rewards.

This matter has been entered into rather fully as misstatements frequently repeated are apt to be accepted as traditional truths.

I am, Sir, yours faithfully,

Feb. 27th, 1923. CLERICUS.

*** Clericus is an advocate, and it is clear that there is another side to many of the situations exposed.—ED. L.

ROYAL LIVERPOOL CHILDREN'S HOSPITAL.—A cheque for over £35,000 was handed to the hon. treasurer of this hospital on Feb. 23rd as a result of a bazaar held last December. The hospital had previously been in debt to the extent of £22,000. At the recent annual meeting Dr. Alfred Holt, the President, referred to the savings effected by the amalgamation with the country branch at Heswall. By these means and the success of the bazaar, he hoped to be able to prevent the recurrence of such financial stringency as in the past.

The Services.

NORTH PERSIAN FORCES MEMORIAL MEDAL.

THE War Office announce the institution of a Memorial Trust Fund, commemorative of the services of the late North Persian Forces, which has been subscribed by officers of the Royal Army Medical Corps and Indian Medical Service who served with these forces. In accordance with the desire of the subscribers to encourage the study of tropical medicine and tropical hygiene, it has been decided that the memorial should take the form of a silver medal, to be known as the "North Persian Forces Memorial Medal," to be awarded annually for the best paper on tropical medicine or tropical hygiene published in any journal during the 12 months ending Dec. 31st by any medical officer, of under 12 years' service, of the Royal Navy, Royal Army Medical Corps, Royal Air Force, Indian Medical Service, or of the Colonial Medical Service. The first award will be for the best paper published during the 12 months preceding Dec. 31st, 1923. The award will be announced in the latter part of the year following that in which the paper was published, provided that the Memorial Committee consider the papers published to have attained a standard of merit justifying an award.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Cmdr. T. B. Shaw succeeds Surg. Capt. R. Bond as Professor of Hygiene and Director of Medical Studies at the Naval Medical School, Greenwich.

ROYAL ARMY MEDICAL CORPS.

Majs. to be Lt.-Cols.: E. E. Parkes to complete estabt.; R. V. Cowey, vice Lt.-Col. A. W. N. Bowen, ret. pay; J. S. Bostock (Bt. Col.) and to remain secd., vice Lt.-Col. D. Harvey, promoted; W. J. Waters, vice Lt.-Col. and Bt. Col. J. S. Bostock secd.; H. F. Shea and to remain secd., vice Lt.-Col. F. P. Lauder, ret. pay; and T. B. Unwin, vice Lt.-Col. H. F. Shea, secd.

Maj. J. H. Barbour retires on ret. pay.

Capts. to be Majs.: B. Biggar (and to remain secd.), C. M. Finny, J. D. Kidd (Bt. Maj.), G. Wilson, E. G. S. Cane, F. A. Robinson, W. A. Frost (Temp. Maj.), D. Reynolds, C. D. K. Seaver, W. T. Graham, W. Bisset, W. L. E. Fretz, P. Hayes, P. M. J. Brett, and T. C. R. Archer.

Temp. Capts. B. F. Haythornthwaite and W. C. McKee relinquish their commns. and retain the rank of Capt.

MILITIA.

Capt. R. B. Campion relinquishes his commn. and retains the rank of Capt.

Capt. C. H. Vernon resigns his commn. and retains the rank of Capt.

Capt. W. K. Churchouse (late R.A.M.C., T.F.) to be Capt.

Lt. J. W. Hirst (late Duke of Wellington's Regt.) to be Lt.

General Hospitals: The undermentioned relinquish their commns. and retain their rank except where otherwise stated: Capts. G. H. Colt (granted the rank of Maj.), N. S. Finzi, H. Peterkin, J. J. Rainforth (granted the rank of Maj.), C. W. Sharpley, G. W. Goodhart, F. V. Milburn, and R. Richards.

Capt. J. B. F. Wilson relinquishes his commission and is granted the rank of Maj.

Sanitary Companies: Capts. J. Chalmers and C. H. Lilley relinquish their commns. and retain the rank of Capt.

TERRITORIAL ARMY RESERVE.

Capt. H. N. Barnett, from Gen. List, to be Lt.-Col.

Capt. L. J. E. McHugh, from Gen. List, to be Maj.

Capt. T. H. W. Alexander, from 1st Scottish Gen. Hospital, to be Capt.

Capt. F. G. Caley, San. Co., relinquishes his commn. and retains the rank of Capt.

ROYAL AIR FORCE.

Flight Lt. (actg. Squadron Leader) F. C. Kempson relinquishes his temporary commission on ceasing to be employed, and is permitted to retain the rank of Maj.

INDIAN MEDICAL SERVICE.

H. Watts-Taylor, J. Carrey, L. G. Pearson, L. B. Jones, and W. C. McKee to be Capts.

H. McNair, C. R. Henderson, I. C. Robertson, and M. Taylor to be Lts.

The King has approved the retirement of Lt.-Cols. W. H. Dickinson and W. J. Niblock.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—M. Hawke, Guy's Hosp.; L. D. A. Hussey, King's Coll. Hosp.; C. M. John, Royal Free Hosp.; and S. W. Turtle (Sect. II.) and A. Vasudev, London Hosp.

Medicine.—K. C. Chock, Creighton University, U.S.A.; S. E. Hymans de Tiel, Royal Free Hosp.; C. S. Laurence, Bristol and Sydney; J. A. Marriott (Sect. II.), Manchester; O. F. W. Robinson, King's Coll. Hosp.; and S. W. Turtle (Sect. II.) and A. Vasudev, London Hosp.

Forensic Medicine.—K. C. Chock, Creighton University, U.S.A.; S. E. Hymans de Tiel, Royal Free Hosp.; J. A. Marriott, Manchester; O. F. W. Robinson, King's Coll. Hosp.; and A. Vasudev, London Hosp.

Midwifery.—F. Bienaschewitsch, Berne and Petrograd; E. W. Hicks, St. Thomas's Hosp.; and J. A. H. Sykes, Edinburgh.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: J. A. Marriott and S. W. Turtle.

ROYAL SOCIETY OF ARTS.—On March 16th, at 4.30 P.M., Sir Leonard Rogers will read a paper before the Dominions and Colonies and Indian sections on Recent Advances Towards the Solution of the Leprosy Problem. The chair will be taken by Earl Winterton, and a discussion will follow the paper. On March 21st, at 8 P.M., an ordinary meeting of the Society will be held, when Dr. F. W. Edridge-Green will lecture on Some Curious Phenomena of Vision and their Practical Importance, Prof. E. H. Starling presiding.

FEDERATION OF MEDICAL AND ALLIED SERVICES.—A meeting of the Executive Council was held at the offices, 12, Stratford-place, London, W., on Feb. 27th. The following lay organisations were elected corporate members: the British Red Cross Society, Messrs. Vickers, Ltd., Messrs. Debenhams, Ltd., the Legal and General Assurance Society, the South Metropolitan Gas Co., the National Insurance Beneficent Society, and the Joint Committee of Approved Societies.

The Council considered its present attitude to the National Health Insurance Medical Service and what steps, if any, should be taken to secure the setting up of the Royal Commission promised, in response to its representations, by the late Minister of Health to inquire into the working of the Acts.

INTERNATIONAL CONGRESS OF MENTAL HYGIENE.—The Ligue Française d'Hygiène Mentale, the Ligue Belge d'Hygiène Mentale, and the United States National Committee of Mental Hygiene will participate in a congress at New York in April, 1924. Among the subjects to be considered are the abuse of stupefying drugs, the reorganisation of teaching of backward children, and child welfare generally, reform of penal systems, psycho-physiological vocational selection, and the technique of psycho-therapy. Any European society desirous of participation in the congress is invited to communicate with Dr. Genil-Perron, general secretary, Ligue d'Hygiène Mentale, 99, Avenue de la Bourdonnais, Paris.

CONGRESS OF OBSTETRICS AND GYNÆCOLOGY.—The fourth annual British Congress of Obstetrics and Gynæcology will be held in Edinburgh on April 19th and 20th, with a possible extension to the 21st. The gathering is a conjoint meeting of the various obstetrical and gynæcological societies in the United Kingdom and Ireland—viz., the Royal Society of Medicine (Section of Obstetrics and Gynæcology), the Edinburgh Obstetrical Society, the Glasgow Obstetrical and Gynæcological Society, the Midland Obstetrical and Gynæcological Society, the Royal Academy of Medicine in Ireland (Obstetrical Section), the Ulster Medical Society, and the North of England Obstetrical and Gynæcological Society. On this occasion the Edinburgh Obstetrical Society hopes to welcome a large number of representatives from the other societies. The Royal College of Surgeons of Edinburgh has granted the use of its hall for the discussions, and the Royal College of Physicians of Edinburgh is allowing the use of its hall for a dinner which will be held on the evening of the 19th. The main discussion on the first day of the congress will be upon intrinsic dysmenorrhœa, regarding the main features of which a report embracing information and statistics from different parts of the country will be presented. There will be opportunity also for a number of short papers on other subjects, and for the exhibition of specimens of special interest. Notice of such papers or specimens should be sent as soon as possible to the secretaries of the Edinburgh Society, Dr. H. S. Davidson, 52, Melville-street, Edinburgh, and Dr. James Young, 29, Manor-place, Edinburgh. Those who intend to be present are also requested to notify the secretaries either directly or through their own society.

Colonel Sir William R. Smith, Senator Dr. D. B. Hewat, and Dr. Herbert G. Tymms have been appointed Knights of Grace of the Order of St. John of Jerusalem in England.

THE Royal Northern Hospital, Holloway, London, N., has received an anonymous donation of £500 in response to its appeal for the nurses' home. £10,500 are still required in order to meet the estimated cost of building the first section on a site already secured.

MEDICAL WOMEN'S FEDERATION.—A dinner will be held by the Federation in the Empire Rooms, the Trocadero, Shaftesbury-avenue, W., on May 10th, at 7.30 for 8 P.M. Communications should be addressed to the secretary, 9, Clifford-street, Bond-street, London, W.

NATIONAL COLLEGE OF TEACHERS OF THE DEAF.—The annual meeting of the College will be held on March 17th at the Bonnington Hotel, Southampton-row, W.C. Lord Charnwood, the President, will deliver an address.

MEDICO-LEGAL SOCIETY.—A meeting of this society will be held at 11, Chandos-street, W., on March 20th, at 8.30 P.M., Lord Justice Atkin, the President, in the chair. Dr. H. A. Burridge will read a paper on State Effort to Rescue Drug Victims, with special reference to the Dangerous Drugs Act.

INSTRUCTION IN HOSPITAL ADMINISTRATION.—A three months' course of lectures and demonstrations in hospital administration will be given at the North-Western Hospital, Lawn-road, Hampstead, London, N.W. 3, by Dr. E. W. Goodall, medical superintendent, on Mondays and Thursdays, at 5.15 P.M., beginning on April 5th. Medical men desiring to attend the course of instruction are requested to send their full name and addresses to the Clerk to the Metropolitan Asylums Board, Victoria Embankment, London, E.C. 4.

TUBERCULOSIS SOCIETY.—A meeting will be held in the Council Chamber, Council House, Bristol, on March 16th, at 10 A.M. At the morning session Prof. Lyle Cummins and Dr. E. Ward will speak on Tuberculosis and Pregnancy, and Dr. Henry Ellis and Dr. Campbell McClure on Reactions relating to Tuberculosis. In the afternoon Dr. H. de Carle Woodcock will give an address on the Physique of the Phthisical, Dr. Halliday G. Sutherland, Dr. T. Nelson, and Dr. Richard Clarke will discuss Difficulties in Diagnosis, and Dr. W. C. Rivers will give a paper on the Domiciliary Treatment of Osteo-Articular Tuberculosis. On March 17th, at 10 A.M., Dr. T. Nelson will give a demonstration of the results of treatment by artificial pneumothorax. Visits will be paid to Frenchay Park Sanatorium and Ham Green Sanatorium.

FOREIGN DECORATIONS.—The following decorations for services rendered during the war have been granted: Médaille de la Reconnaissance Française en Argent to Lieut.-Colonel J. Miller, R.A.M.C. (T.), by the President of the French Republic; Commander of the Order of St. Maurice and St. Lazarus to Major-General Sir Foster R. Newland, A.M.S. (retired pay); and Chevalier of the same Order to Captain T. D. Inch, R.A.M.C. (Reserve of Officers), by the King of Italy.

LINCOLN COUNTY HOSPITAL.—A contributory scheme for the hospital was adopted by the Governors at a meeting held on Feb. 20th. Captain H. T. W. Nevile, R.N., chairman of the Board of Management, outlining the scheme, said if an adequate income were to be raised to maintain the institution, it was absolutely necessary that some action should be resolved upon. Since 1919 the deficit caused by excess of expenditure over receipts had been accumulating, and it now stood at £4343 4*s.* 4*d.* The board, after studying what had been done in other places, concluded that the best way of raising and maintaining an adequate income was by means of a contributory scheme. They had found that the income required when the new ward was completed would be about £19,000 a year. The scheme laid down that contributions asked for from the city and the country area must be in proportion to the work done for each; that patients from places which did not come into the scheme must pay the actual cost of their treatment; and that patients from places which did not contribute the full amount asked for under the scheme would have to pay a proportional part of the cost of their maintenance. Local hospital associations are to have representation on the board of governors and the recommending of patients. Mr. R. B. Purves, surgeon to the hospital, said that unless some such action as that proposed was taken they would meet with a steady decline that would ultimately mean State control. He believed that any hospital not able to stand on its own legs, and moreover unable to go ahead and keep improving, would be swept into the net in time.

ROYAL LANCASTER INFIRMARY.—This hospital is in the fortunate position of being out of debt, has a small credit balance on the year's working, and a sum in hand for extensions and development. The income for the year was £10,952 and the expenditure £8555, which enabled the committee to wipe out an adverse balance of £2016. There was a large increase of subscriptions from workpeople under the new contributory scheme—from £1350 in 1921 to £3351 in 1922. A bazaar last year added £5743, whereby the debt on the extension fund was wiped off and a sum set aside for developments and improvements. Altogether from legacies, special gifts, and the bazaar £11,679 were received by the infirmary committee during the year.

COÖPERATION BETWEEN MEDICAL OFFICERS OF HEALTH AND PRACTITIONERS IN MANCHESTER.—A gathering of the medical profession in Manchester met on Feb. 28th in the Town Hall, at the invitation of the Lord Mayor, to meet the new medical officer of health, Dr. Veitch Clark. Dr. Clark, in a short speech, said there was nothing more fundamental to the success of modern preventive medicine than a whole-hearted friendship between that part of the medical profession officially representing the city and those who were practising among the citizens. The greatest of all natural laws was the law of continuity. Up to the end of last century public health administration was mainly concerned with things which, though they were essential for the welfare of the community, were not specifically medical—the provision of good water-supplies, means of dealing with sewage, and so on. In this century, however, the profession had entered upon a new line of work—a direct attack upon disease. The primary function of his department was one of prevention. By working wholeheartedly together the medical profession was following on the lines which would in the end produce the greatest benefit to the public.

LEICESTER PUBLIC MEDICAL SERVICE.—At the annual meeting held on Feb. 13th the report for 1922 of the Leicester Public Medical Service was presented, together with the annual report for that year of the committee of the Leicester Subdivision of the Union of Medical Practitioners. The number of subscribers to the various sections of the Public Medical Service was 39,706 in the first half, and 39,441 in the second half of the year, against 39,097 and 38,935 respectively in 1921. The rate per capita paid to "acting members" of the Service for attendance on uninsured subscribers was the highest rate yet paid. The Board of Management has continued the arrangement whereby free treatment is provided for the uninsured blind of Leicester under the care of the Institution for the Welfare of the Blind, the Wycliffe Society for helping the Blind, and the members of the Cripples' Guild. The number of prescriptions issued during the year was 195,097, against 185,260 in 1921. The arrangement with the education committee for accommodation to be provided at the central dispensary for the dental work of the school clinic has been continued: 3607 new cases, in addition to many others, were treated during the year. By arrangement with the Ministry of Health a consulting room at the central dispensary was again provided for the purposes of the regional medical officer, and greatly increased use was made of it. Drugs, &c., were supplied during the year to several members of the Service, the account amounting to a little over £94. The hope is expressed that more members of the Service will avail themselves of this materially advantageous system. The Board again arranged with the Leicester guardians for dispensing medicines for the outdoor sick poor. The total amount received by the Public Medical Service during 1922 amounted to £21,122 14*s.* 4*d.* on the general account, and to £326 19*s.* 7*d.* on the furniture and renovation account. In the report of the committee of the Leicester Subdivision of the Union of Medical Practitioners it was stated that the scheme for collective locum-tenencies during sickness short absences was in operation from Oct. 1st, 1921, to March 31st, 1922. Three doctors availed themselves of the scheme; a sum of £34 11*s.* 11*d.* was available for distribution, which was made at the rate of 1*s.* 7*d.* per unit, the units numbering 437. The scheme of collective locum-tenencies was successfully continued from April 1st to Sept. 30th, 1922; 17 doctors took advantage of the scheme; a sum of £195 10*s.* 4*d.* was available for distribution, which was made at a rate of 1*s.* $8\frac{5}{6}$*d.* on a total number of 2282. The committee expressed in the report their appreciation of the measure of support their proposals met with. By the majority of panel practitioners consenting to a levy in the aggregate of 1*d.* per annum for each insured person on their lists, the committee were enabled from the amount thus received to defray the expenses of the Leicester Sub-Division of the Union of Medical Practitioners, and the expenses of the panel committee, to contribute about £100 to medical and allied charities, £185 to the National Insurance Defence Trust, and £35 to the Medical Representation in Parliament Fund.

ROYAL (DICK) VETERINARY COLLEGE, EDINBURGH.—It is proposed to found a post-graduate research Fellowship as a permanent memorial of the centenary of the foundation of this College in November, 1823. Funds for this purpose should be sent to Dr. O. Charnock Bradley, the Principal, from whom further information may be obtained.

MEDICAL AND DENTAL REGISTERS.—We have received a copy of the Medical and Dental Registers for 1923. The Medical Register has 1240 pages devoted to practitioners registered as qualifying from medical schools in the United Kingdom and Ireland, 76 pages to colonial medical men, and 3 pages to foreign graduates registered in this country. The corresponding figures for 1922 were 1214, 66, and barely 3. The total number of persons now on the register is 46,477, against 45,408 in 1922. The Dental Register consists of 310 pages, against 146 in 1922, showing the increase due to registration of practising dentists under the new Act.

PRECAUTIONS AGAINST SMALL-POX.—Several new cases have been notified at Clowne, Derbyshire, where there has been a mild epidemic for some considerable time. At Bentley also, near Doncaster, where about 20 cases have already been notified, another case has been reported, while at Doncaster itself 11 new cases have been notified within the past few days. The Lancashire Asylums Board, as a precautionary measure, have issued a notice that no visitors can be allowed to see their friends at the County Mental Hospital, Whittingham, Preston, for the present, and no parcels can be received.

CRICHTON ROYAL INSTITUTION, DUMFRIES.—The report of this Institution for 1922 records a number of structural changes postponed during the stringent years of the war. As in the case of many similar institutions, the influence of war conditions persists in the form of structural depreciation, and in spite of the general fall in prices; the moderate increase in fees which was made has, therefore, to be maintained for the present. The reputation of the Institution is well supported by the fact that nearly 30 per cent. of the private patients during last year were voluntary boarders. No particulars are given of the forms of mental disorder from which these patients suffered, which is the more unfortunate since the degree and varieties of mental illness compatible with voluntary status are the subject of some difference of opinion. To the officers of institutions where certification is recommended more freely such information would be of value and interest. Its necessity is the greater for the fact that the death-rate among these voluntary boarders was considerably higher than in the case of the certified patients. These data are open to the inference that senile cases and general paralysis are admitted on a voluntary basis, a practice unusual in this country. The laboratory work, for which the Crichton Royal Institution is known, is at present curtailed owing to a vacancy in the post of pathologist, and no record of this work during the past year is given.

DONATIONS AND BEQUESTS.—The late Sir Carl Meyer, of Newport, Essex, and of Park-crescent, has left by will £1000 each to King Edward's Hospital Fund for London and the National Hospital for the Paralysed and Epileptic, and £500 to the Saffron Walden General Hospital.—By the will of the late Mr. John William Horsfall, of Halifax, the testator left £10,000, free of duty, to his trustees for any charitable purpose or purposes at their discretion; £500 to the Royal Halifax Infirmary; £250 each to the Halifax Branch of the National Society for the Prevention of Cruelty to Children and Dr. Barnardo's Homes; and £100 each to the Halifax Police Court Mission and the Society for the Home Teaching of the Halifax Blind.—Dr. Ellis Thomas Davies, of Liverpool, left £10,560, and directed that the ultimate residue of the property as to one-fourth be given to the Royal Benevolent Fund, one-fourth to the Medical Faculty of the University of Liverpool, one-fourth to University College, Bangor, for a scholarship for aiding poor and deserving Welsh students of either sex, and the remaining fourth to certain Wesleyan Missions. His engraving of the late Lord Lister the testator left to the Liverpool Medical Institute.—The Board of the Bradford Dyers Association, Ltd., have decided to make a donation of £5000 to the Bradford Voluntary Hospitals in response to the special appeal by the Lord Mayor. Other donations authorised were £250 to the Bradford Royal Infirmary, £50 each to the Manchester Royal Infirmary, the Salford Royal Hospital, the Royal Albert Asylum, Lancaster, £40 to the Royal Halifax Infirmary, £20 to the General Infirmary, Leeds, and £10 to a number of hospitals and associations.—A gift of £1000, in the interests of Medical Missions of the Wesleyan churches, in memory of the late Miss Emily M. P. Wood, of Southport, is announced.—The local hospitals of Manchester and Salford will benefit to the extent of over £2000 as the result of the Manchester Students' "Rag" on Shrove Tuesday. Last year's effort realised £1265.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, FEB. 28TH.

Dangerous Drugs and Poisons Bill.

On the motion for the second reading of the Dangerous Drugs and Poisons (Amendment) Bill,

Mr. BRIDGEMAN (Home Secretary) said the object of the measure was to increase the facilities and powers for dealing with the illicit traffic in drugs which was very largely of an international character. Under Clause 1 they were seeking for increased powers of search so as to discover the persons who were carrying on this trade in secret places. The second power for which they were asking—in Clause 2—was intended to bring within the penal provisions of the Bill acts done in this country with a view to illicit transactions abroad. They were also of opinion that the existing penalties were inadequate in cases where persons were engaged in these drug transactions in a large way. Enormous profits were made. In an instance which he heard of recently it was believed that someone got as much as 2400 oz. of morphine and 2500 oz. of cocaine which represented several million doses. France had already increased the penalties in such cases and the Council of the League of Nations recommended to the Governments concerned to consider the question of more substantial sentences of imprisonment. It was therefore proposed to substitute for the existing penalties a maximum of ten years' penal servitude or a fine of £1000, or both, in cases of conviction on indictment, and secondly, a maximum penalty of 12 months' imprisonment or a fine of £250, or both, in cases tried summarily. It was proposed to do away with the provisions for increasing the penalty for a second offence. Provisions in Clause 3 were meant to meet a difficulty which the Pharmaceutical Society brought to the notice of the Government in regard to supplying drugs to duly qualified medical practitioners. Under the Pharmacy Act, 1868, there was a "poison book" which everyone was expected to sign if they bought any of these drugs at a chemist's shop, but it was impossible in practice, he believed, to observe that provision, and it had been allowed largely to fall into disuse. Under Clause 3 they wished to prevent, if they could, people professing to come for medical practitioners to order these drugs at chemist's shops, to make it quite clear that they were required for a medical practitioner and to safeguard, if they could, the transit between the shop and the practitioner. The seller had to enter in a book the words "signed order" instead of requiring the doctor to sign, and if the article was sent by post it must be sent by registered post, and must not be sold to anybody except a registered medical practitioner in actual practice. It was possible that some of the medical profession might wish to have some slight modification of this clause which he would be very ready to consider, but it was very important to rectify the position in which they were left by the fact that Section 17 of the Pharmacy Act was not suitable to present conditions.

Sir F. BANBURY thought that the Bill was a very drastic one and not very clear in regard to some of its provisions. He would not oppose the second reading, but he thought the measure required very careful amendment in committee.

Sir SYDNEY RUSSELL-WELLS said he supposed that medical men were more acquainted with the dangers, the temptations, and the horrors to which the drug-taker was exposed than any other portion of the community. Neither he nor any other member of his profession would wish to interfere with the intention of the Government to stop the illegal sale and improper use of these dangerous drugs as far as possible. But while not wishing to oppose the second reading of the Bill he thought that it would require drastic amendment. In regard to the suggested increased penalties they must remember that this Bill and the Act to which it was an amending measure created various offences other than the intentional and nefarious traffic in dangerous drugs. It would have been better if the precedent of the Food and Drugs Act had been followed and the various offences had been scheduled and classified with appropriate maximum penalties attached to each. This would sooner or later have to be done or the Acts would become a dead letter. A doctor who, from carelessness or hurry, omitted to make the proper entries in the books he was compelled to keep, or who did not retain the invoices of the drugs he had bought, would be liable to a fine of £1000 or to be imprisoned for ten years, or both, just as if he had been guilty of providing a drug-taker with 10 lb. of cocaine. That was ridiculous. There was more reason for alarm with regard to the penalties to be inflicted on summary conviction. Again, any medical man who prescribed one of these remedies for himself was guilty of an offence against the Act. No doubt certain doctors were drug-takers, but he was convinced that their

number was very small. He regretted that there was no provision in this amending Bill for sweeping away this ridiculous regulation. First of all, it hampered the doctor unnecessarily by creating a new offence, and secondly, as a preventive it was futile. Drugs must be in the doctor's consulting-room for cases of emergency, and he supposed there was not one practitioner in a thousand who did not constantly carry with him a case in which there was a certain quantity of morphia or cocaine or both for emergency use. The prohibition to prescribe for himself in no way affected the medical man's power of obtaining a drug if he wished to take it. But should he write a prescription for himself he committed an offence which rendered him liable to all the dire penalties prescribed by the Bill. When it came to a question of prescribing drugs to relieve pain doctors, he believed, would be willing to break the law in order to give relief. And in this he was certain public opinion would support the profession. Clause 3 of the Bill contained quite a new provision. It applied to all poisons and not simply to cocaine and morphia, and these regulations would stop any medical man getting any poisonous drug without definitely signing and sending a document. In a case of confinement with severe hæmorrhage, for example, a doctor would require certain drugs which he would not usually carry with him. He could not leave the patient and there might be no one to send. If he telephoned the chemist would, under this Bill, not be allowed to send the drug. He wondered if hon. Members were aware of the amount of drugging carried on by means of patent medicines. He had known cases where morphia fiends got their morphia through purchasing chlorodyne. The Government should insist that every patent medicine should have on its label the substances it contained, or at any rate, the poisonous substances and the exact proportion in which they existed. He thought he might speak on behalf of the medical Members of the House, because he was secretary of the committee of medical Members, and they urged most strongly that the Government should seriously revise the Bill and should take into conference those who were engaged in the actual practice of medicine.

Major MOLLOY said that the Bill had his complete sympathy so far as its principles were concerned. He represented, however, a very much harassed and hard-working class of people, the general practitioners of medicine and surgery, upon whom certain provisions of this Bill would bear very hardly. He urged that amendments were necessary in respect of the penalties to which medical men might be liable for a purely technical offence; the facilities for obtaining drugs in an emergency; and the prohibition imposed upon a practitioner to prescribe drugs for himself.

Mr. BRIDGEMAN, replying to the debate, said he was quite ready to listen to any suggestions for making certain provisions of Clause 3 more workable, and he hoped that the medical Members of the House and those they represented would supply him with some form of words which would effect his purpose without doing them any injury.

Dr. CHAPPLE said this piecemeal legislation was very largely wasting the time of the House. The evil that was being done to the community to-day was not to be measured by the scope of this Bill. Patent medicines containing many of these very drugs were being advertised all over the kingdom and were creating a craving in hundreds of thousands of people.

The motion for the second reading of the Bill was agreed to.

Cost of Medical Insurance Benefit.

Mr. RHYS DAVIES asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, the amount annually expended in England and Wales out of national health insurance funds in the provision of medical benefit by insurance practitioners in the provision of drugs and appliances to insured persons, respectively; and, as far as his knowledge extended, the amount similarly expended in Scotland and Ireland.—Sir W. JOYNSON-HICKS replied: The amounts annually expended in England and Wales out of national health insurance funds are approximately: (1) Provision of medical benefit (excluding drugs) by insurance practitioners, £6,520,000; (2) provision of drugs and appliances, £1,280,000. The amounts similarly expended in Scotland are (1) £870,000 and (2) £160,000. Medical benefit is not provided to insured persons in Ireland.

Institutional Treatment for Tuberculosis.

Mr. TOM WILLIAMS asked the Minister of Pensions (1) how many ex-Service men entitled to pensions were at present receiving institutional treatment for pulmonary tuberculosis in sanatoriums; and (2) the cost per week per patient to the pensions department.—Major TRYON replied: Approximately 3000 ex-Service men are at present receiving residential treatment in institutions for tuberculosis. The average cost of treatment is £2 17*s.* 6*d.* a week for each patient, and, in addition, treatment allowances averaging £2 a week for each patient are paid by my department.

Food Adulteration Prosecutions.

Mr. TOM WILLIAMS asked the Secretary for the Home Department the number of prosecutions and convictions for adulteration of food during the years 1921 and 1922.—Mr. BRIDGEMAN replied: According to the annual returns of crime for adulteration of food, drugs, &c., there were 3555 persons proceeded against in 1921, of whom 2329 were convicted, while in 1922, 2400 persons were proceeded against for offences of this kind, of whom 1586 were convicted. The figures for 1922 are provisional only. The figures for 1921 include offences against the Beer and Spirits (Prices and Descriptions) Orders now repealed.

State Examination for Nurses.

Dr. CHAPPLE asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, whether any curriculum had been drawn up prescribing the course of training for nurses qualifying under the Nurses Registration Act, 1919; and whether any provision had been made for holding a State examination for nurses.—Viscount WOLMER replied: The General Nursing Council have submitted a draft syllabus of training and examinations and my right hon. friend is now in communication with the Council in regard to them. Arrangements for conducting examinations which will be held by the Council and not by the Ministry have not yet been made.

Cost of Pauper Lunatics.

Mr. ALBERT ALEXANDER asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, whether boards of guardians had informed him that the present charge per head for pauper lunatics was excessive, and that in view of the heavy charges made upon the Poor-law authorities for the maintenance of the pauper lunatics boards of guardians should have representation upon the various asylums boards; and what steps he proposed to take in the matter.—Viscount WOLMER replied: The answer to the first part of the question is in the affirmative. It is not possible to deal with this matter without legislation which it would not be practicable to introduce at present, but the point has been noted for consideration when any general amendment of the Lunacy Acts is undertaken.

Milk (Special Designations) Order.

Mr. HOPE SIMPSON asked the Parliamentary Secretary to the Overseas Department, as representing the Ministry of Health, whether his attention had been called to the fact that the provisions of the Milk (Special Designations) Amendment Order, 1922, now lying upon the table of the House, required the employment of a plant for pasteurisation, the expense of which was beyond the means of the smaller retail dairyman; whether he had received any representations on the point; and whether the danger that the application of this Order would tend to increase the power of the milk combine had been brought to his notice.—Viscount WOLMER replied: Some representations have been made to my right hon. friend in the sense suggested by the hon. Member, but he does not regard them as sufficient to justify a departure from the principles on which the Order has been made. "Pasteurisation" is a designation applied to milk which has been subjected to certain heating processes, as set out in the Order. It is obvious that such processes cannot be undertaken except by the adoption of the necessary means or machinery, entailing some capital expenditure. My right hon. friend wishes to point out that there is nothing in the Order to compel any dairyman to pasteurise the milk he offers for sale.

Accommodation in Tuberculosis Sanatoriums.

Mr. RHYS DAVIES asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, the number of persons at any recent given date notified as suffering from tuberculosis who had failed to secure admission to sanatoriums.—Viscount WOLMER replied: The number of persons recommended for and awaiting treatment for tuberculosis in residential institutions from local authorities in England and Wales on Feb. 1st, 1923, was 2902, on which date 16,393 persons were receiving such treatment and there were a number of vacant beds. My right hon. friend is not aware of the number of notified cases which have not been admitted to residential institutions, but the hon. Member no doubt appreciates that not all notified cases of tuberculosis require, or are willing to receive, such treatment.

Unemployment Insurance and Hospital Staffs.

Colonel Sir CHARLES BURN asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, whether it was intended to return the whole or any part of the contributions on account of unemployment insurance paid by nurses, including sisters, and hospitals during the period of two years, in view of the fact that no benefit would accrue to the parties who made them from such payments; and, if not, why not; and

what was the amount of contributions paid by or in respect of hospital nurses and sisters from July 1st, 1920, to June 30th, 1922.—Sir M. BARLOW (Minister of Labour) replied: I have no power to refund these contributions. It would be a laborious undertaking to ascertain the amount of contributions paid by nurses or of the benefit drawn by them. I would point out, however, that when the proposal for the exclusion of nurses was before Parliament it was ascertained that a considerable number of nurses were drawing benefit and in view of this a definite understanding was arrived at that contributions should be paid by nurses up to July, 1922.

Cost and Scarcity of Insulin.

DR. CHAPPLE asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, whether, in view of the fact that the cost and scarcity of insulin were depriving many poor sufferers from diabetes of the measure of cure which it was able to provide, he would make a special grant in aid of its more rapid and abundant production.—Viscount WOLMER replied: It is not the case that the poor only are deprived of the advantages of insulin, which cannot be made available until a supply of known efficiency, potency, and safety is attained upon a manufacturing scale. Considerable progress has been made by the Medical Research Council in this direction, and the Council believe that subject to limitation of raw material in particular districts, the successful manufacture of insulin in the near future is assured. No special grant in aid would accelerate production at this stage.

Compulsory Pasteurisation of Milk.

Mr. BECKER asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, whether it was the Government's intention to introduce a Bill to compel pasteurisation of all milk for human consumption.—Viscount WOLMER replied: The answer is in the negative.

Sanatoriums in Great Britain.

Mr. TOM WILLIAMS asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, the total number of sanatoriums in Great Britain, with the approximate or actual accommodation; the number of cases who were waiting for sanatorium treatment; and what steps he intended to take to meet the situation.—Viscount WOLMER replied: The number of residential institutions approved by my right hon. friend for the treatment of tuberculosis in England and Wales is 455, with a total accommodation of about 20,555 beds. On Feb. 1st 2902 cases were awaiting residential treatment, but as there was a number of vacant beds on that date it is probable that many of these cases have now been admitted to institutions, and my right hon. friend does not consider it necessary to take any special steps in the matter.

Adolescents and Drunkenness.

Mr. GREAVES LORD asked the Home Secretary what number of persons under the age of 18 had been charged with drunkenness during the years 1919, 1920, 1921, and 1922, and how many such persons had been convicted.—Mr. BRIDGEMAN replied: The only figures I can give are those of convictions in the age groups used in the criminal statistics, thus: 1919, no convictions under 16 years of age, 2610 between 16 and 21; 1920, 2 under 16, and 4063 between 16 and 21; 1921, 2 under 16, and 2172 between 16 and 21. The figures for 1922 are not yet available.

Charges against Panel Practitioners.

Mr. BURGESS asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, if he was aware that private patients very often receive priority of attention when medical practitioners had a combined practice; that many patients requesting home attendance were asked to call at the surgery; that many panels were too large to secure efficient service to insured persons; and what steps he proposed to take to improve these conditions.—Viscount WOLMER replied: The information available to the department does not indicate that the practices to which the hon. Member refers are generally prevalent, but if he is aware of specific cases in which insurance practitioners have failed to carry out their obligations, my right hon. friend hopes that he will report them to the local Insurance Committee concerned with a view to investigation and disciplinary action if the complaints are established. If an insurance committee find that inefficiency of service is due to the acceptance by the practitioner of too great a number of insured persons they have power, after consultation with the Panel Committee, to reduce his list.

Assistance for Dental Students.

Mr. ALBERT ALEXANDER asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, whether he was aware that the Dental Board of the United Kingdom had informed the candidates concerned that the scheme for educational assistance and maintenance to those who desired to qualify under the Dentists Act, 1921, would not be considered until the end of May; that this delay was causing great hardship to a large number of ex-Service and other candidates who had been arbitrarily excluded from the profession under Section 3 (1) (3) of the Dentists Act, 1921; and whether, in view of the fact that the Dentists Act had now been upon the Statute Book for more than 18 months, he would take immediate steps to expedite the completion of the scheme or, alternatively, to make some other provision for those who were now without either employment or maintenance.—Viscount WOLMER replied: The reply to the first part of the question is in the affirmative. As regards the second part the age-limit is statutory, and no objection was raised on this point when the Bill was under discussion in the House. As regards the third part of the question my right hon. friend has no jurisdiction over the Dental Board in this matter.

FRIDAY, MARCH 2ND.

Dogs' Protection Bill.

Sir F. BANBURY moved the second reading of the Dogs' Protection Bill, a measure to prohibit vivisection experiments on dogs. He said that the Bill had three times received a second reading in that House, twice without opposition, and once by a majority; and on one occasion it passed committee and report stages and was only rejected on third reading. The only argument advanced against it was that it would do harm to medical research. Practically its only opponents were doctors. (Hon. Members, "No.") The majority were doctors. (Hon. Members, "No.") He might quote a short passage from THE LANCET of May 31st, 1919, which said: "The memorandum of the Medical Research Committee, which we also print, demonstrates without reasonable gainsay that the experimental use of dogs has advanced our knowledge and been of benefit to suffering humanity. This is not to say that such knowledge could have been acquired in no other way." Therefore it was clear from the evidence of medical men that they could have acquired the knowledge which they said they had acquired in another way than by experimenting on dogs.

Mr. J. JONES said he desired to second the motion of his right hon. and dogmatic friend. (Laughter.)

Lieut.-Colonel FREMANTLE said that there was no time to advance a tithe of the arguments which rose to one's lips in speaking against this Bill. Sir F. Banbury had quoted but at the same time misread a passage from THE LANCET. THE LANCET did not say that such results as had been achieved from experiments on dogs could have been achieved in other ways. THE LANCET was unable to say that these results could not have been achieved in other ways—which was an entirely different thing. THE LANCET, as a matter of fact, said what they all agreed upon. Very often they might find experiments on other animals would give similar results in the long run, but the great point of medical research work was that when they started it in the laboratory they could not go directly to their end by the particular route they thought best; they had to spread their net as widely as possible in the hope that science would reveal herself with results that they could not anticipate. Among things that must be so revealed were different points which could only be revealed through experiments on dogs.

At this stage, it being 4 o'clock, the debate stood adjourned under the Standing Orders, and the Bill was accordingly "talked out."

Legitimacy Bill.

Mr. H. BETTERTON moved the second reading of the Legitimacy Bill, which he said provided that where the parents of an illegitimate child married one another before or after the passing of the Act, the marriage would render that person, if living, legitimate. The Bill would not legitimise a person whose father or mother had been married to a third party. It was an attempt to bring the law of this country into conformity not only with that of most civilised countries abroad, but also with that of Scotland.—Capt. BOWYER seconded.

Sir S. RUSSELL-WELLS opposed the measure.—Sir D. HOGG (Attorney-General) said the Government, while not hostile to the Bill, did not regard it as a party measure, and left it to the free vote of the House.—The second reading was carried without a division.

MONDAY, MARCH 5TH.

Training Centres for the Blind.

Mr. GRAHAM WHITE asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, the number of workshops, hostels, and training centres for blind persons which had been opened since the Blind Persons Act, 1920, came into operation.—Sir W. JOYNSON-HICKS replied: Since the Blind Persons Act, 1920, came into operation four new workshops have been opened and considerable extensions have been made to six existing workshops. One new hostel has been opened

and one extended. Training centres are under the control of the Board of Education, but my right hon. friend is informed by that department that they have recognised eight new centres and four new hostels for training purposes.

Local Authorities and the Blind.

Mr. GRAHAM WHITE asked the Parliamentary Secretary to the Overseas Trade Department, as representing the Ministry of Health, the number of local authorities who had not submitted schemes for the exercise of their powers under the Blind Persons Act, 1920.—Sir W. JOYNSON-HICKS replied: The number of local authorities who have not submitted schemes for the exercise of their powers under the Blind Persons Act, 1920, is ten.

TUESDAY, MARCH 6TH.

Child's Death after Vaccination.

Mr. LUNN asked the Secretary of State for the Home Department whether he was aware that Mr. F. Scholefield, of Buckley-road, Beeston, Leeds, was ordered by the Leeds magistrate on Feb. 15th to have his child vaccinated; that the child for whom the order was made died from convulsions through teething on Feb. 24th; and whether he would instruct the magistrate who made the order to cancel it and abstain from asking for costs in this case.—Mr. BRIDGEMAN replied: I have no authority to give instructions of this nature to a magistrate. When a court has made an order imposing costs on a defendant, it is for the parties by whom the costs will otherwise be payable to decide whether they will press for the enforcement of this part of the order and for the court to decide whether it will enforce it. I have no power to interfere with the court's discretion in the matter.

Mothers' Pensions.

Mr. RHYS DAVIES called attention to the question of mothers' pensions; and moved, "That, in the opinion of this House, pensions adequate for the proper upbringing and maintenance of children should be paid to all widows with children or mothers whose family breadwinner has become incapacitated, such pensions to be provided by the State and administered by a committee of the municipal or county council wholly unconnected with the Poor-law."—Mr. LUNN seconded.

Mrs. WINTRINGHAM, in supporting the motion, urged that it could be carried out without any fresh machinery. Children under 5 could be dealt with at the welfare centres, and those between 5 and 14 by the educational authorities. None of the countries that had adopted mothers' pensions had repealed them. She understood that it cost 17*s.* 6*d.* for each child maintained under the Poor-law, and surely it would be better to give a widow 10*s.* a week for each child, and let her keep them at home. The future of the country as an A1 nation depended upon the health of the children.—Sir W. JOYNSON-HICKS, in opposing the motion on behalf of the Government, said that it would cost something between £45,000,000 and £50,000,000 a year, which the country could not afford at the present time.—The motion was rejected by 248 votes to 184.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, March 12th.

WAR: at 5 P.M.
Paper:
Colonel J. F. C. Fuller, D.S.O., p.s.c.: Problems of Future Warfare.
The Discussion will be opened from the medical standpoint by Lieut.-Colonel P. A. Anderson, R.A.M.C., to be followed by Lieut.-Colonel W. P. MacArthur, D.S.O., and others.
This meeting should be of particular interest and visitors are cordially invited.

Tuesday, March 13th.

THERAPEUTICS AND PHARMACOLOGY: at 4.30 P.M.
Discussion on the Action of Quinidine in Cases of Cardiac Disease.
To be opened by Prof. F. R. Fraser, followed by Dr. A. N. Drury, A. E. Clark-Kennedy, and Dr. T. F. Cotton.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Paper:
Mr. J. E. Adams will read a paper on the Urgent Need for Education in the Control of Cancer.
A Discussion will follow, opened by Dr. C. P. Childe, Lord Dawson, Dr. Herbert Spencer, and others will also speak.

PSYCHIATRY: at 8.30 P.M.
Papers:
Dr. C. S. Myers: The Association of Psychoneuroses with Mental Deficiency.
Dr. H. J. Norman: Genius and Insanity.

Thursday, March 15th.

DERMATOLOGY: at 5 P.M. (Cases at 4.30 P.M.)
Cases:
Dr. E. Graham Little:
(1) Mycosis Fungoides;
(2) Folliculitis Ulerythematosa Reticulata;
(3) Lichen Planus of Unusual Distribution.
Dr. Bunch: Case of Premycosis.
Other cases will be shown.

Friday, March 16th.

OTOLOGY: at 5 P.M. (Cases at 4.45 P.M.)
Cases will be shown by Sir James Dundas-Grant, Mr. F. J. Cleminson, and others.
Papers:
Dr. F. M. R. Walshe: The Symptomatology of Eighth Nerve Tumours.
Mr. Wilfred Trotter: The Surgical Treatment of Tumours of the Eighth Nerve.

ELECTRO-THERAPEUTICS: at 8.30 P.M.
Paper:
Prof. Gosta Forsell (of Stockholm): Some Observations on Movements of Gastro-Intestinal Mucosa.

CLINICAL, MEDICINE, SURGERY.
Members of these Sections are cordially invited to attend the above meeting of the Section of Electro-Therapeutics.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.
MONDAY, March 12th.—8.30 P.M., Discussion on the Value of Laboratory Investigation in Diseases of the Liver (including Biliary System) and of the Pancreas, to be introduced by Dr. Langdon Brown, followed by Dr. Langmead, Dr. McKenzie Wallis, Dr. J. W. McNee, Dr. E. A. Dodds, Dr. G. A. Harrison, Mr. H. E. Griffiths, Dr. George Graham, Dr. C. M. Wilson, and others.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.
THURSDAY, March 15th.—8.15 P.M., a Laboratory Meeting will be held at the R.A.M. College, Grosvenor-road, S.W. Demonstrations will be given by Major E. E. Austen, Colonel A. Alcock and Lieut.-Colonel H. J. Walton, Drs. J. A. Arkwright and H. M. Woodcock, Dr. Broughton-Alcock, Dr. S. H. Daukes, Lieut.-Colonel S. P. James, Dr. J. G. C. Ledingham, Prof. R. P. Leiper, Dr. J. W. S. Macfie, Dr. H. B. G. Newham, Lieut.-Colonel H. Marrian Perry, Dr. A. C. Stevenson, and Dr. G. M. Vevers.

WEST KENT MEDICO-CHIRURGICAL SOCIETY, Miller General Hospital, Greenwich, S.E. 10.
FRIDAY, March 9th.—8.45 P.M., Dr. W. Langdon Brown: The Influence of the Endocrines in the Psychoneuroses.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.
TUESDAY, March 13th.—5 P.M., Third Goulstonian Lecture: Dr. G. Evans: The Nature of Arteriosclerosis.
THURSDAY.—5 P.M., First Lumleian Lecture:—Dr. A. J. Hall: Encephalitis Lethargica (Epidemic Encephalitis).

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
MONDAY, March 12th.—5 P.M., Hunterian Lectures on Man's Posture: its Evolution and Disorders: Prof. Sir A. Keith. Lecture IV.
WEDNESDAY.—5 P.M., Lecture V.
FRIDAY.—5 P.M., Lecture VI.

FELLOWSHIP OF MEDICINE, POST-GRADUATE LECTURES, 1, Wimpole-street, W.
WEDNESDAY, March 14th.—5.30 P.M., Mr. A. J. Walton: The Differential Diagnosis of Surgical Dyspepsias.

WEST END HOSPITAL FOR NERVOUS DISEASES.
The following Clinical Demonstrations will be held during the forthcoming week in the Out-patient Department of the Hospital, 73, Welbeck-street, W. The Demonstrations are open to Practitioners and Medical Students without fee.
WEDNESDAY, March 14th.—1.30 P.M., Dr. W. R. Reynell: Common Neuroses.
FRIDAY, March 16th.—5 P.M., Dr. Worster-Drought: Diagnosis of Cranial Nerve Lesions.
C. WORSTER-DROUGHT, M.D., Dean.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
FRIDAY, March 16th.—4.30 P.M., Dr. Swift Joly: Demonstration of Urological Cases.

UNIVERSITY OF LONDON ADVANCED LECTURES IN MEDICINE, Robert Barnes Hall, Royal Society of Medicine, 1, Wimpole-street, W.
WEDNESDAY, March 14th.—5.30 P.M., Sir Archibald E. Garrod: Hæmatoporphyria Congenita (Congenital Porphyrinuria).

UNIVERSITY COLLEGE, Gower-street, W.C.
(Course of Three Public Lectures in the Physiology Theatre.)
WEDNESDAY, March 14th.—5 P.M., Mr. A. H. Drew: The Cultivation of Tissues in Vitro.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, POST-GRADUATE COURSE, Westmoreland-street, W.
THURSDAY, March 15th.—5.30 P.M., Sir Sydney Russell-Wells, M.P.: The Differences in the Circulation in Aortic and Mitral Disease.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: JAN.–MARCH, 1923.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, March 12th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Lecture:—Trauma in the Ætiology of Organic and Functional Nervous Diseases: Dr. Kinnier Wilson.

TUESDAY, March 13th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Disseminated Sclerosis: Dr. Hinds Howell.

THURSDAY, March 15th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Lecture:—Electrical Treatment of Some Common Nervous Disorders: Dr. Bailey.

FRIDAY, March 16th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Lecture:—Compression Paraplegia: Mr. Sargent.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

NEURO-PATHOLOGY.

MONDAY, March 12th.—12 noon, Poliomyelitis and Encephalitis Lethargica: Dr. J. Godwin Greenfield.

N.B.—A Course of Lectures in the Anatomy and Physiology of the Nervous System will be given if there are sufficient entries for it.

The fee for the whole Course, including Anatomy and Physiology, is £12 12*s.*; but these Lectures may be taken separately for a fee of £4 4*s.* Course without Anatomy and Physiology Lectures will be £10 10*s.* Any part of the Course may be taken separately at a special fee. Special arrangements will be made for those unable to take the whole Course. Fees should be paid to the Secretary of the Hospital at the office on entering for the Course.

C. M. HINDS HOWELL, Dean of Medical School.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY, March 12th.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Addison: Surgical Wards.

TUESDAY.—10 A.M., Dr. Patterson: Demonstration of Medical Cases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.

WEDNESDAY.—11 A.M., Mr. Simson: Gynæcological Demonstration. 12 noon, Dr. Burnford: Pathological Demonstration. 4 P.M., Dr. Owen: Diagnosis of Medical Diseases of the Pancreas.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Bishop Harman: Eye Department.

FRIDAY.—12 noon, Dr. Flett: Radiology. 2 P.M., Mr. Banks-Davis: Diseases of Throat, Nose, and Ear. 3 P.M., Mr. Sinclair: Surgical Cases.

SATURDAY.—9 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10.30 A.M., Mr. Maingot: Surgical Pathology.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street.

THURSDAY, March 15th.—4 P.M., Mr. Barrington Ward: After-Treatment of Operations.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.

THURSDAY, March 15th.—5 P.M., Dr. C. H. Roberts: Rupture of the Uterus.

MANCHESTER ROYAL INFIRMARY, POST-GRADUATE COURSES.

TUESDAY, March 13th.—4.15 P.M., Mr. W. H. Hey: Jaundice from the Surgical Point of View.

FRIDAY.—4.15 P.M., Mr. W. R. Douglas and Dr. J. M. W. Morison: The Diagnosis of the Surgical Treatment of Lesions of the Large Intestine.

SALFORD ROYAL HOSPITAL POST-GRADUATE LECTURE.

THURSDAY, March 15th.—4.30 P.M., Dr. Jenkins: The Bacteriology of Acute and Chronic Rheumatism.

THE INSTITUTION OF HEATING AND VENTILATING ENGINEERS, Engineers Club, Coventry-street, W.

FRIDAY, March 9th.—7 P.M., Mr. J. G. Clark: Gas as a Fuel.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, March 14th.—4 P.M., Dr. J. H. Sequeira: Prevention of Congenital Syphilis.

Appointments.

MARTIN, A. A., M.D. Lond., B.S., M.R.C.S. Eng., D.P.H., has been appointed a Medical Referee under the Workmen's Compensation Act for County Court Circuit No. 50 (Eastbourne, Hastings, and Rye County Courts).

MASON, J. H., M.B., Ch.B. Vict., D.P.H., Assistant School Medical Officer, Northampton Borough Education Committee.

Coombe Hospital, Dublin: DOUGLAS, Miss, L.R.C.P. & S.Irel., Clinical Research Assistant; CRIGHTON, B., M.D. Dub., Infant Physician; PEPPER, G. E., L.R.C.P. & S.Irel., in charge of the X Ray Department; and CANNON, D. J., M.B., B.Ch., B.A.O., in charge of Radium Department.

Dr. Steevens' Hospital, Dublin: PURSER, F. C., M.D. Dub., Consulting Neurologist; PEPPER, G. E., L.R.C.P. & S. Irel., Assistant Surgeon; O'LEARY, MARY M., M.B. N.U.I., Anæsthetist.

Certifying Surgeons under the Factory and Workshop Acts: BEATTIE, W. F. (Stourbridge); ROBERTSON, A., M.B., C.M. Edin. (Hornsea, East Riding).

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary Treatment Centre.—Jun. M.O. £500.
Ayr County Hospital.—Res. H.S. £175.
Barnet, Wellhouse Hospital.—Asst. Res. M.O. £150.
Bethnal Green Hospital, Cambridge-road, Bethnal Green, E.—Asst. Med. Supt. £500.
Birmingham Orthopædic Centre.—Jun. M.O. £350.
Bristol General Hospital.—Hon. Surg. Reg.
Bristol Royal Hospital for Sick Children and Women.—Hon. S. to Out-patients.
Burnley County Borough.—Asst. M.O.H., &c. £500.
Buxton, Devonshire Hospital.—Asst. H.P. £150.
Carlisle, Cumberland Infirmary.—R.M.O. £175.
Colchester, Severalls Mental Hospital.—M.O. Locum Tenens. 7 guineas weekly.
Durham County Education Committee.—Asst. Oculist. £600.
Eastbourne, Princess Alice Memorial Hospital.—Hon. M.O. for Radiological and Electro-Therapeutic Department.
Elizabeth Garrett Anderson Hospital, Euston-road.—Asst. M.O. £1 1*s.* per attendance. Also Asst. P. to Out-patients.
Halifax Royal Infirmary.—Third H.S. £150.
Inverness District Asylum.—Jun. Asst. M.O. £250.
Leicester City.—R.M.O. £350.
Liverpool Eye and Ear Infirmary.—H.S.
London Fever Hospital, Islington, N.—Hon. Aural S.
London Lock Hospital, 91, Dean-street, W.—H.S. £200.
Manchester City.—Female M.O. £632 7*s.* 8*d.*
Portsmouth Child Welfare Centres and Municipal Maternity Hospital.—M.O. £500.
Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Two Asst. Res. M.O.'s. £80.
Rotherham Hospital.—Jun. H.S. £150.
Royal Chest Hospital, City-road, E.C.—Res. M.O. £200. Also H.P. £120.
Royal National Orthopædic Hospital, 234, Great Portland-street, W.—H.S. £150.
Royal Northern Hospital, Holloway-road, N.—Surgeon for Diseases of Ear, &c.
St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. £175.
St. Peter's Hospital for Stone, Henrietta-street, Covent Garden, W.C.—H.S. £75.
Salford Royal Hospital.—H.P. £200. H.S. and Cas H.S. £150 each.
Seamen's Hospital Society, Dreadnought Hospital, Greenwich, S.E.—H.S. £150.
Sheffield, South Yorkshire Asylum.—M.O. £400.
South London Hospital for Women, Clapham Common, S.W.—H.P. £100.
South Shields, Ingham Infirmary.—Jun. H.S. £150.
Sunderland Royal Infirmary.—H.S. £160.
Truro, Royal Cornwall Infirmary.—H.S. £170.
University College Hospital, Gower-street, W.C.—Clin. Asst. for Ear, Nose, and Throat Dept.
University College Hospital Medical School, University-street, W.C.—Asst. to Professor of Pathology. £500.
West Derby Union, Brownlow Hill Institution.—Asst. Res. M.O. £300.
West End Hospital for Nervous Diseases, Regent's Park, N.W.—Jun. H.P. £100.
Western Ophthalmic Hospital, Marylebone-road, N.W.—First and Second H.S.'s. £150.
West London Hospital, Hammersmith-road, W.—H.P. and Two H.S.'s. Each £100.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.

Births, Marriages, and Deaths.

BIRTHS.

HINCKS.—On Feb. 28th, at Sunny Mead, Wells, Somerset, the wife of Dr. A. C. Hincks, M.C., of a son.

LOUGHLIN.—On March 3rd, at Swaffham, Norfolk, the wife of D. Loughlin, M.R.C.S., L.R.C.P., of a daughter.

ROBINSON.—On Feb. 10th, at 23 B, Manchester-road, Southport, to the wife of John Hargreaves Robinson—a son (by induction).

ROSS.—On March 1st, at Westacre, Sleepers Hill, Winchester, the wife of E. Athole Ross, M.D., M.R.C.P., of a son.

WESTON.—On Feb. 27th, at East Ascent, St. Leonards-on-Sea, the wife of Dr. H. J. Weston, of a son.

MARRIAGES.

BROWNE—THOMSON.—On March 6th, at St. Hildeburgh's, Hoylake, by the Rev. W. T. Warburton, Hablot Browne, M.D., of Hoylake, to Dora Thomson, of Wath on Dearne, Yorks.

DEATHS.

HARDYMAN.—On Feb. 27th, Dr. Hardyman, Hill House, Bramerton, nr. Norwich, aged 75.

*N.B.—A fee of 7*s.* 6*d.* is charged for the insertion of Notices of Births, Marriages, and Deaths.*

Notes, Comments, and Abstracts.

REFLECTIONS ON HIGH BLOOD PRESSURE.*

BY SIR HUMPHRY ROLLESTON, K.C.B., M.D., D.C.L., LL.D.,

PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON; EMERITUS PHYSICIAN, ST. GEORGE'S HOSPITAL, LONDON.

ALTHOUGH von Basch of Vienna invented his sphygmomanometer in 1881, it is only within the present century that its use has become familiar in medical practice. An important milestone in the history of blood pressures was Korotkoff's description in 1905 of the auscultatory method which renders the estimation of the diastolic pressure as easy as that of the systolic pressure. The period of *réclame* when a high blood pressure was the signal for measures to bring it down at all costs is passed.

It is important to get a true perspective of the value of blood-pressure estimations; there is a certain amount of personal variation in different individuals, and the actual height of the blood pressure must be regarded as but one out of several manifestations that have to be taken into account, and not as the only one of importance. It is advisable not to inform the patient exactly what his blood pressure is, as this may lay up a store of future anxiety; and blood-pressure estimations should not be made frequently. On the other hand, the discovery of a high blood pressure in its early stage before the onset of secondary and structural changes has a great prophylactic value as it thus enables further progress to be counteracted. There is, therefore, much to be said from the point of view of preventive medicine in advising people of 40 years of age and over to have their blood pressure recorded every six months or so in order that their manner of life may, if necessary, be modified. Just as most sensible people pay periodic visits to the dentist to see if any change has taken place in their teeth, so a fortiori should they take a stitch in time as regards the infinitely more important cardiovascular system. Slight differences in pressures taken at different times must not be regarded as important. Not only must transient variations in the patient, such as are due to excitement, be taken into account, but also the personal equation of the examiner depending on his acuity of sense or touch in feeling the pulse or of hearing when employing the auscultatory method. A difference of 10 to 15 mm. in the systolic pressure should not necessarily be regarded as of any significance in one's own reading, and this reservation should be more liberal in comparing the readings recorded by different observers. It is thus clear that undue importance may be attached to an isolated examination of the blood pressure, especially if that is taken by a stranger in imposing and anxious circumstances.

It has been objected that clinical sphygmomanometry cannot accurately represent the intra-arterial pressure on account of the interference exerted by the condition of the arterial walls, arteriosclerosis, calcification, and spasmodic contraction, and by the amount of intervening—muscular and fatty—tissue. As regards arteriosclerosis it has been found that the rise due to this cause, even when calcification has occurred, is not more than 10 to 15 mm. (Janeway and Park). The effect of spasmodic contraction in raising the resistance to the compressing force exerted by the cuff and so increasing the apparent blood pressure has been much insisted on by Prof. William Russell; as a rule the local tonus can be made to disappear by repeated compression of the artery. This is another reason for taking several readings at each examination.

Normal Blood Pressure.

The blood pressure gradually rises from birth when the systolic pressure has been stated to be 35 to 55 mm.Hg. As a rough rule for arriving at the healthy systolic pressure for a man's age (a woman's must be taken at 10 mm. or so lower) I am accustomed to add 100 to the age and to consider this as the maximum systolic pressure which should not cause anxiety, and to regard 100 plus half the age as the most satisfactory healthy systolic pressure; thus, for a man of 40 years of age a systolic pressure between 140 and 120 may be regarded as within the normal limits. Very possibly these limits are too narrow. The diastolic pressure may be taken as three-quarters of the systolic pressure up to middle life, but after this and in old age, from the frequency of rigid arteries it falls and may be only half the systolic pressure.

It must not be forgotten that blood pressure is subject to certain physiological and racial variations.

* Abstract of the annual address, delivered before the Newcastle-upon-Tyne and Northern Counties Medical Society.

Difference of the blood pressure in the two arms may be due to various factors, physiological or pathological, and so be either unimportant or significant. A physiological explanation is that the first reading taken is often emotionally high and that by the time the other arm is examined the normal level has been approached. A difference on the two sides may depend on anatomical abnormalities in the size and distribution of the blood-vessels in the upper limbs. Of pathological significance are differences on the two sides due to arteriosclerosis more advanced at the orifice of the innominate or of the left subclavian, an aortic or other aneurysm, an intrathoracic tumour, or a cervical rib. It is not infrequent in hemiplegia and, according to Dana, suggests that the optic thalamus is damaged.

The Effect of Tobacco Smoking on Blood Pressure.—From a pharmacological point of view nicotine has a very powerful pressor effect, but this is in doses much larger than are usually absorbed in man. Tobaccos vary considerably in their nicotine content. The immediate effect of smoking is to raise the systolic pressure from 5 to 25 mm. Hg, the diastolic being much less affected. At the same time the pulse-rate is increased. But in a short time the blood pressure falls to normal or even below normal. It is generally agreed that confirmed smokers have a low blood pressure. As age advances and as arteriosclerosis becomes more frequent, tolerance for tobacco becomes less.

High Blood Pressure.

Sex Incidence.—Males are more often the subject of high blood pressure than females. It is interesting to note that according to some hypotheses of high blood pressure the female sex should be much more prone to this condition than is really the case; for women are more subject than men to constipation and to hypothyroidism.

Heredity undoubtedly plays a part in the production of high blood pressure, and measures can thus be adopted to counteract a known tendency. It is commonly stated that high arterial blood pressure and its common result arteriosclerosis are much more frequent in these strenuous hustling times than in the more spacious past; before the introduction of the sphygmomanometer, however, very many cases must have remained unrecognised.

The relation between high blood pressure and arteriosclerosis established by Sir Clifford Allbutt is as follows: (1) High blood pressure often precedes the appearance of arteriosclerosis which may then be called hyperpietic arteriosclerosis. (2) Arteriosclerosis is not invariably of this nature but may be due to toxic or infective agents, of which syphilis is a well-known example. (3) Though arteriosclerosis does not cause a high blood pressure, the two conditions are often associated.

Ætiology.—In discussing the ætiological factors of continued high blood pressure a division into two separate groups is convenient: (1) Cases in which nephritis, acute, subacute, or chronic, has undoubtedly preceded the advent of high blood pressure. (2) Cases in which there is no evidence of renal disease before or in the early stages of the high blood pressure. This form of high pressure was sometimes spoken of as essential, primary, or benign hypertension. Sir Clifford Allbutt introduced the name of hyperpiesia. While welcoming a sharp cut distinction between the primary renal and non-renal cases, it must be admitted that, apart from the assistance of tests for renal efficiency, it is difficult to be certain in cases of high blood pressure that early renal change is not present and, indeed, perhaps playing its part by the production of some pressor substance, in the maintenance of the hypertension (H. B. Shaw). A diagnosis between pure hypertension and renal high blood pressure is, however, important both from the point of view of prognosis and of treatment, and in arriving at such a diagnosis the quantitative examination of the non-protein nitrogen of the blood is invaluable.

In *essential high blood pressure or hyperpiesia* the causal factor, though it need not be the same as in renal disease, might well be a somewhat similar pressor body. An obvious suggestion is that in different instances different bodies or poisons are responsible.

It must be admitted that of the cause or causes of simple permanent high blood pressure we really have no exact knowledge. It is difficult to disagree with Batty Shaw's view that the cause is toxæmia, but as the toxins are unknown, it is for practical purposes essential to act on the data we have as to the antecedent conditions that appear to play a casual part; they are excess of protein food, worry, and diseases and conditions of environment which upset normal metabolism, one of the ways being by inducing disorder of the glands of internal secretion. It would be interesting to know how long high blood pressure takes to develop. That nervous excitement will raise it in a few minutes is familiar, and that acute nephritis will rapidly bring it about is certain. The question requiring an answer is how long as a rule does the persistent rise of blood pressure take to be evolved in cases without preceding renal

change? It generally appears to be a slowly advancing process of many years' duration, but is it not sometimes relatively acute?

Clinical Features.

In considering the clinical manifestations of high blood pressure it is important to bear in mind the distinction between those that are associated with increased blood pressure only and those that result from concomitant or secondary disease of the vascular or other systems. Thus arteriosclerosis with cerebral hæmorrhage or thrombosis and arteriosclerotic atrophy of the kidneys with uræmia are the late secondary or end-results of continued high blood pressure. Failure of the compensatory cardiac hypertrophy should be regarded in a similar light to arteriosclerosis, and as a late result of long sustained high blood pressure, which might never have occurred had hyperpiesia been recognised and counteracted in its early stages. In practice it is essential to grasp the different significance to be attached to high blood pressure (*a*) when not accompanied by evidence of arterial disease, and (*b*) when so complicated. Thus cerebral hæmorrhage is not likely to supervene as long as the arterial system remains healthy. Clinically, however, it is unsafe to say that because the vessels sufficiently superficial to be palpable are healthy, there is not some arteriosclerosis of the cerebral, coronary, or mesenteric vessels, though ophthalmoscopic examination of the fundi may help by showing the characteristic silver wire arteries of arteriosclerosis.

Latency.

High blood pressure is quite commonly found in vigorous persons who are unconscious of any disability; thus Külbs found that among 288 persons (172 males, 116 females) with a systolic blood pressure of 170 mm. or more there were 20 per cent. without any symptoms; we must therefore recognise that high blood pressure may be in some respects, and for some time at least, a beneficent process which compensates for some disorder of function: just as according to Thoma arteriosclerosis is originally a compensatory mechanism to prevent dilatation at the site of weakness of the muscular media. Here we have two compensatory medianisms which frequently fail and finally become pathological. What the compensatory effect of high blood pressure is we do not know; possibly it may have several functions, just as it appears to have several causes. As the velocity of the blood-stream rises with the increase of blood pressure, the necessity for a more efficient blood-supply to the tissues or for purposes of efficient elimination may be an explanation. The absence of symptoms in some cases of high blood pressure would appear to show that though something is wrong compensation has been established for the time being, whatever may happen in the future. In fat people high blood pressure is often present and frequently latent (Aubertin and Coursier). In latent high blood pressure the physical signs are the sphygmomanometer readings, the sensation conveyed to the examining finger by the pulse, and in permanent high blood pressure of some duration hypertrophy of the heart and accentuation of the second sound over the aortic area. The blood pressure in the capillaries is low (Boas and Frant). It has been stated that oscillation of the leg when the corresponding knee is crossed over the other shows that the blood pressure is over 160 mm. Hg (Molle); this phenomenon, so familiar in aortic incompetence, would appear to depend on a large pulse pressure which is a result of rigid vessels and not necessarily associated with a very high systolic pressure. A more important sign of high blood pressure, though due to accidental circumstances, such as an angioma or an ulcer in the nasal passages, is epistaxis. This may be the first indication of abnormally high pressure in a vigorous man quite free from any feeling of illness, and the information that he is the subject of high blood pressure may come like a bolt from the blue.

Remarks on High Blood Pressure in Cardiac Affections.

In cardiac disease high blood pressure is mainly of interest in (1) the distinction of primary from secondary cardiac failure, and (2) in connexion with aortic regurgitation. In primary myocardial insufficiency and in primary mitral disease the systolic blood pressure is not, as might be expected, considerably below normal but is well maintained (H. J. Starling). In cases of secondary cardiac failure due to high blood pressure the elevated systolic pressure reveals the cause. The blood pressure in mitral stenosis varies in different cases; whereas in cases with healthy kidneys it is normal or slightly raised there is a group of cases in which mitral stenosis is associated with, if not secondary to, renal fibrosis (Pitt, Cowan and Fleming), and it is not unlikely that syphilis may cause both mitral stenosis and granular kidney; in such cases the blood pressure may be very considerably raised. In aortic regurgitation the pulse pressure is large, though in some cases the thud ordinarily heard over the arteries in this form of valvular disease makes it difficult to determine the diastolic pressure by the auscultatory method. Leonard Hill, Flack, and others have shown that in aortic regurgitation there is a well marked difference between the systolic pressure in the arm and in leg when the patient is lying down, being much higher in the leg. This difference is also found in abdominal aortitis (Heitz, Gallavardin), in arteriosclerosis, and in high blood pressure. It is not due to the regurgitation of blood into the ventricle, but to the condition of the vessels.

The Prognostic Value of Blood Pressure in Acute Disease.

In most acute infections the blood pressure is lowered. Diphtheria shows a well marked fall of blood pressure; in scarlet fever the lowering of pressure is much less than in diphtheria and enteric fever. The behaviour of the blood pressure in pneumonia has aroused considerable interest. The late G. A. Gibson formulated an attractively worded dictum that when the arterial pressure, expressed in millimetres of mercury, does not fall below the pulse-rate, expressed in beats per minute, the fact may be taken as of excellent augury, while the converse is equally true. This law has naturally been investigated, and it appears that the important factor in its prognostic bearing is the pulse-rate and not the maintenance of a blood pressure near the normal. Newburgh and Minot in America and Geoffrey Evans in this country found that the blood pressure was higher in the fatal than in the surviving cases of pneumonia. Tuberculosis is generally regarded as characterised by a low blood pressure. In syphilis the blood pressure is not necessarily raised. Secondary syphilitic changes in the endocrine glands and the widespread lesions of congenital syphilis, of which granular kidney may be one, may lead to a high blood pressure. It appears that though recent syphilitic infection does not raise the blood pressure, its protean effects may do so. When this occurs the special arterial lesions will increase the liability to cerebral hæmorrhage.

Prognosis.

Many patients live for years although their systolic blood pressure is 200 mm. and diastolic 120 mm. But as the statistics of life insurance companies and others show, the mortality of individual with systolic pressures over 160 mm. is much above the average; de Havilland Hall in private practice saw 125 patients with systolic blood pressure under 160 mm., and 5 deaths, or 3 per cent., and 48 patients with pressures over 160 mm., and 19 deaths, or 39·6 per cent. But within limits the actual height of the systolic blood pressure is not so important as the relation between the raised systolic and diastolic pressures. A high diastolic pressure, so that the pulse pressure is small, is the more serious condition as it is likely to be associated with granular kidney and carries with it the danger of cerebral hæmorrhage or uræmia. These cases may benefit from dietetic and purgative treatment. A high systolic pressure with a diastolic pressure relatively low, so that there is a large pulse pressure, is prone to lead to cardiac failure, and does not appear to react to dietetic restrictions, though digitalis helps them for a time. A steadily rising pressure is of worse prognosis than a stationary one, but a sudden fall of blood pressure is a cause for anxiety, as this is very probably due to cardiac failure. With regard to the prognosis of high blood pressure and the danger of cerebral hæmorrhage, it is well to bear in mind G. W. Norris's conservative statement that less than 15 per cent. of patients with a blood pressure of 200 mm. or above die from this cause, and that cerebral hæmorrhage may occur in patients whose blood pressure has not been known to be above 170 mm. Dyspnœa in a patient with hyperpiesia is a sign that the disease has advanced more than might otherwise be obvious; transient paralysis and slight strokes are very ominous, for it is often difficult to be sure that cerebral arteriosclerosis and minute hæmorrhages or focal degenerations are not in reality responsible, instead of simple spasm of a cerebral artery.

Treatment.

As high blood pressure is a sign of some underlying disorder or toxæmia, and is possibly to some extent a compensatory process, it is unwise to treat it simply by vasodilators and cardiac depressants. Vasodilators are probably useful in the crisis of high blood pressure, but none the less the essential indication is to deal with the conditions that may have a causal influence—namely, over-eating, worry, and toxæmia. The object at first should not be so much to reduce the blood pressure as to prevent any further rise. Over-eating and drinking, meat except in great moderation, meat extracts, strong coffee and tea, alcohol except in great dilution, and salt should be forbidden. As regards purins there is some difference of opinion, but it is safer to discountenance any but a very modest use of them. The intake of fluids should also be restricted. Rest in bed is useful when the heart is showing signs of stress, and usually brings the blood pressure down, but when the period of bed is over the blood pressure often rises to much the same elevation as before. Patients with high blood pressure should be encouraged to take moderate exercise according to their ability, and if this be difficult to obtain, massage may be

substituted. It is important to obtain distraction from worries and anxieties by the cultivation of hobbies, golf, travel, and visits to spas. The easy advice to avoid worry is often a difficult prescription to dispense, but small doses of bromides may be useful in making the patients more philosophic, less sensitive and irritable, and so less prone to react to mental pinpricks.

As regards drugs there is no single panacea. Of purgative and antiseptic drugs to minimise intestinal stasis and putrefaction calomel has a high repute; minute doses (1/20 gr.) of calomel exert an antiseptic without, of course, any purgative effect. Of the nitrite and allied preparations sodium nitrite and erythrol tetranitrate have a more prolonged effect than trinitrin; and mannitol nitrate has an even more lasting effect than erythrol tetranitrate. In some cases a tablet of trinitrin helps the patient to sleep. As to the effect of iodides much has been written; clinical experience is in its favour. Hippurates and guipsin have been recommended, but have not inspired widespread confidence. The rise of blood pressure occurring at the menopause has been thought to be relieved by the administration of corpus luteum, especially by the hypodermic route (Osborne).

As to the effects of high-frequency currents Ronneaux and Lacquerriere, after an experience of 25 years, state that high-frequency currents have not any lasting effects as regards lowering the blood pressure in patients with a constantly raised blood pressure; but, nevertheless, its use reduces some of the minor symptoms, such as headache, giddiness, sleeplessness, and cold hands. As regards the administration of digitalis, now that it is recognised that digitalis does not raise the blood pressure in man, it may safely be given to persons with high blood pressure when indicated.

THE EARLY SPREAD OF JENNER'S TEACHINGS.

THE Royal Jennerian Society was founded in 1802 to spread the doctrines of vaccination, Edward Jenner being the first president. At the same time, or somewhat earlier, there had been established what was known as the Original Vaccine Pock Institution, having its headquarters in Broad-street, Golden-square, and intended as a distributor of "vaccine pock matter" or vaccine. A correspondent sends us the following interesting note on the proceedings of the two societies:—

"The Royal Jennerian Society for the Extermination of the Small Pox held its annual general court at the Central House, No. 14, Salisbury-court, on Wednesday, the 7th of March, 1804, and the Report of the Board of Directors and Medical Council then stated that 5987 persons had been inoculated under the auspices of the society and that over 6000 charges of vaccine matter had been issued from the Central House alone to every part of the Empire and of the world. The report expressed 'a confidence that such a foundation was laid as to afford a reasonable hope of gradually accomplishing the Extermination of the Small Pox.' Funds, however, were needed, and on the motion of Messrs. William Wilberforce and John Julius Angerstein it was agreed that the 'slumbering philanthropy' of the public should be appealed to in a practical manner. At the same time the Duke of Bedford was thanked 'for his Grace's condescending attention as Chairman,' and it was announced that a number of life governors, including Benjamin Travers, an important figure at the Royal College of Surgeons of England, had already subscribed from 1 to 5 guineas each. In May came the meeting and report of the Original Cow Pock Institution, when Lord Petre, chairman, explained 'that there was a register of observations made twice a week for 230 weeks, viz., from January, 1800; that the number of subjects inoculated, i.e., 2000, did not constitute the principal utility of the Institution, but the long-continued, uninterrupted observation nowhere else to be found. That it appeared that above 12,000 parcels of matter had been furnished to the public, and it was fairly estimated that not fewer than 60,000 persons had been 'vaccinated,' directly or indirectly, from the Institution. Deaths from small-pox had in 1804 sunk in Great Britain to 622, as compared with the average of 2018 annually in the latter half of the eighteenth century. This good result was doubtless greatly owing to the pioneer work of these two societies, connected as they were with those public benefactors, the Wilberforces, Angersteins, and Heavisides.

"In 1808 the Royal Jennerian Society ceased to exist, for, curiously enough, it had lost touch with Jenner's teachings and the Chief Resident Inoculator had set himself up as an authority in opposition. Jenner accordingly spent five months in London founding and organising the National Vaccine Establishment, which in time became the National Vaccine Institute. The report of the establishment in 1812 had become a State paper, which, after referring to the distribution of 23,794 charges of vaccine lymph in London alone in 1811, goes on to give interesting particulars as to the spread of vaccination in the navy, army, the British Isles, Ireland, India—small-pox had already disappeared in Ceylon—in the Dominions, and in Italy and Germany. The old-fashioned practice of inoculation, however, was still a source of public danger. 'It is much to be lamented,' says the report, 'that there are still some Medical Practitioners who obstinately persist in disseminating by inoculation the contagion of the Small Pox, and who strenuously encourage and support, especially among the lower orders of the people, the prejudice against the new practice.' The contagion is thus constantly kept up, and inoculation 'where it saves a single life, exposes numbers to a most dangerous disease.'

"Jenner would seem to have succeeded completely outside the British Empire. Napoleon could refuse nothing to his name. In Switzerland and Geneva the clergy preached vaccination, and the Chinese published his work on the cow-pox inoculation in their own language. From the East the chorus of praise of Jenner has not diminished. Of late years Prince Malcolm Khan, son of the famous Persian stateman, when on a visit under the guidance of the late Mr. Reginald Harrison to the library of the Royal College of Surgeons, asked first to be shown Edward Jenner's lancets. As he held in his hand the particular ones with which George Jenner, of the Vaccine Establishment, performed the earlier vaccinations, the turbaned ex-Etonian spoke feelingly of the manner in which whole Asiatic countries had been rescued by the teachings of Jenner from a scourge more terrible in the East than ever it was in Europe."

COLONIAL HEALTH REPORTS.

Basutoland.—From the annual report signed by Mr. R. B. Smith, Government Secretary, it appears that in 1921 typhus fever was prevalent; the number of cases and the death-rate being approximately the same as in the previous year (503 cases, 93 deaths); influenza, though very prevalent, was trivial in character (963 cases with 2 deaths). Pneumonia of a mild type has been noted, with only 2 deaths out of 79 cases reported. There were 187 cases of dysentery with 14 deaths. The cases of small-pox reached a total of 521, principally in the district of Leribe, with 53 deaths. Varicella was often observed, and in the native races it is frequently mistaken for small-pox by unpractised observers. In connexion with the infectious diseases mentioned it is worthy of note that in the district most remote from contact with European centres—viz., Qacha's Nek—there were but few cases of any kind. Steps were taken during the year in regard to the prevalence of syphilis. All cases of that disease now receive free treatment, and depôts have been established for the distribution of antisyphilitic remedies. This action has been greatly appreciated by the natives. In the leper settlement there were on Dec. 31st, 1921, 491 patients—229 males and 262 females—showing an increase of 77 over the number resident on the same date in 1920. The desertions during the year numbered 41. There were only 25 deaths, the smallest on record since the opening of the institution; 14 patients were discharged as arrested cases, and this result is in no small measure due to the success of the sodium morrhuate treatment adopted by Dr. Slack, the medical officer. A beginning has also been made with the treatment of leprosy by the ethyl esters of the chaulmoogric acids, but it has not been in use long enough for an opinion as to its efficiency to be given; 232 patients passed through the hospitals during the year, most of them suffering from cellulitis, ulcers, or other tropic lesions of leprosy.

Fiji.—The Hon. T. E. Fell, C.M.G., Colonial Secretary, in his report for 1921 remarks that the climate is exceptionally healthy. Malarial fever, the curse of so many tropical countries, is entirely absent, and the anopheles mosquito is not found in any island of the group. Europeans live to advanced ages and children thrive. Many Europeans, with their families, have resided in Fiji for prolonged periods without apparent damage to their vitality or constitution. The most prevalent diseases of a serious nature are dysentery and typhoid fever. Infection is generally fly-borne rather than water-borne. The drier climate of the north and west sides of Vitilevu was formerly badly infested with flies when both these diseases were prevalent, as was also ophthalmia in that locality. Within the last ten years flies have almost disappeared, and these diseases have now become rare. A similar improvement has occurred in Suva, on the wet side of the island, as a result of an efficient sewerage system; but in the rest of the most rainy zone cases of dysentery and enteric fevers are, unfortunately, not infrequent. Search has been made for a fly parasite. Large numbers of fly pupæ in manure are devoured by ants. A small wasp has recently been found by Dr. Carment, M.O.H., and Mr. H. Simmons, Government entomologist, as a common parasite of fly pupæ. It is hoped that this parasite may reduce fly infestation, but whether it has been the chief cause of the disappearance of flies on the dry side is not yet determined. A renewed effort is being made by the Government and the Rockefeller Foundation to reduce the high rate of infection amongst the Fijian and Indian population with ankylostomiasis. Sanitary measures are insisted on and

carbon tetrachloride, a new anthelmintic (non-toxic, efficient, and cheap) is being administered to the people. The results up to now are promising, but several years' work will be necessary to stamp out the disease, so common in all tropical colonies. Education, through native medical practitioners and other means, is modifying the native view as to the desirability of infection of children with yaws. The salvarsan group of drugs is much sought after, and, if funds allow, it is now practicable to consider the eradication of a disease almost as deadly in its after-effects as syphilis is elsewhere. The method of intravenous injection of chaulmoogra oil for leprosy is being steadily improved by Dr. Harper, medical superintendent of the Makogai Leper Asylum. As far as the evidence yet goes permanent cure may result in favourable cases from its use. The proposal to erect a Memorial Hospital in Suva, and to establish cottage hospitals in outlying centres, in memory of those from Fiji who gave their lives in the late war, received enthusiastic support of the public and the necessary funds were readily forthcoming. The levelling of a site for the main hospital at Suva is being proceeded with. The building, estimated to cost £40,000, will be erected in ferro-concrete and will provide accommodation for 102 patients. A census of the population was taken in April, and showed 157,266 persons to be resident in the colony—viz., Europeans, 3878; half-castes, 2781; Fijians, 84,475; Indians, 60,634; Chinese, 910; others, 4588. The most gratifying features of the census are the figures showing that the decline of the Fijian race has been arrested, and that the disparity in the numbers of sexes of the Indian community is rapidly disappearing. The total rainfall recorded at Suva during 1921 was 170·74 inches, or 56·19 above the average. The average temperature for the year at Suva was 77° F.

A UNIQUE ATHLETIC ACHIEVEMENT.

A MEDICAL correspondent writes from Vienna as follows:—"Medical circles have recently been astonished and diverted by the extraordinary muscular strength of an athlete of Jewish extraction, Breitbart by name. This phenomenon is 34 years old, 190 cm. (6 ft. 3 in.) in height, and weighs 95 kg. (a little under 15 st.). His muscles are remarkably developed, particularly the biceps and forearm, chest, and thigh muscles; he is also very handsome and well built. He can easily bend iron rods into horse-shoes, or twist them into cork-screw shapes; he can bite through an iron or steel chain a fifth of an inch thick, lift huge weights, or place an anvil on his chest and allow iron to be hammered on it. A committee of experts—physicians, engineers, smiths, and presidents of athletic corporations—recently investigated his abilities, as the credibility of his feats was doubted, and as a girl of 19 years also claimed to be able, under hypnotic influence, to accomplish similar feats. The committee first examined the girl who, it was alleged, could perform these tasks only under hypnosis. She was able to bend and twist iron rods about one-third of an inch thick, but her strength was regarded as nothing extraordinary, some of the committee also being able to perform her feats, and no necessity for calling hypnotic or supernatural forces into play was recognised, it being merely a matter of training. With the 'modern Samson' it is an entirely different thing. Whilst, for instance, the normal pressure of a masticating molar tooth is about 25 kg., to bite through a steel chain requires immense force. Exact examination proved that the athlete accomplished this feat upon several chains, more by torsion of the link than by actual biting. He was then given rods of iron, about half an inch square, 2 metres long, which he bent into a circle by quick pressure of his hands, using the mouth as a fulcrum. This circle he then bent further into a spiral by pulling one end across the other. Here he used not only the arms, but also the pressure of the body, thus bringing into action first the scapular, supra- and infra-spinal and pectoral muscles, afterwards the abdominal muscles, together with the biceps and the forearm muscles. Pressure by the latter was measured and found to amount to 120 kg. in this experiment. In bending short, broad (1½ in.) hoops into a horse-shoe, he used his quadriceps cruris as a fulcrum, then exerted pressure by means of the adductor muscles of the thigh, placing his hands between his knees. The most remarkable achievement, however, is the following: A rail 10 metres long, 10 cm. (4 in.) thick, and 6 cm. (2½ in.) broad is placed on top of his head. A dozen people hang on to each side of this rail and try to bend it over his head. With a quick short jerk the athlete succeeds in bending it. Other feats, as lying flat on a bed of nails about ½ an inch apart, with their points up, are not extraordinary, but he is able to drive with a single stroke of his fist without a hammer, a nail completely into a board 1 in. thick after first biting off the point of the nail. The feats have been demonstrated so often and so uniformly to experts that there is no trace of a doubt left. The committee are satisfied that he accomplishes these tasks by means of extraordinary muscular power, coupled with excellent scientific training and exceptional muscular synergy."

EXPORTS OF MORPHINE AND ITS SALTS.

IN last week's issue of THE LANCET (p. 468) we published a statement by the Home Secretary showing the quantity of morphine and its salts registered as exported from the United Kingdom during 1920. Below will be found the figures for 1921, distinguishing the countries of destination prepared from returns rendered by exporters licensed under the Dangerous Drugs Act, 1920, to the Home Office.

Europe.	Amount in oz.
Austria	976·0
Belgium	2,711·8
Channel Islands	26·47
Czecho-Slovakia	2,046·12
Denmark	1,409·08
Esthonia	1·76
Finland	370·34
France	36,007·33
Germany	3,600·39
Gibraltar	4·09
Greece	40·64
Holland	1,134·58
Italy	6,742·19
Malta	26·41
Monaco	0·03
Poland	353·06
Portugal	149·91
Russia	4·0
Spain	4,775·19
Sweden	0·76
Switzerland	9·49
	60,389·64

Asia.	
Aden	1·12
Arabia	1·84
British North Borneo	21·0
Ceylon	87·72
China	1,101·41
Cyprus	5·29
Dutch East Indies	71·34
Federated Malay States	180·73
Goa	1·04
Hong-Kong	60·4
India	1,319·79
Japan (Korea)	320·07
Mesopotamia	32·22
Palestine	11·14
Persia	117·76
Siam	52·56
Siberia	388·01
Straits Settlements	27·32
Syria	78·1
Turkey	1·22
	3,880·08

Africa.	Amount in oz.
Algeria	4·52
Angola	0·43
Basutoland	2·28
Congo Belge	4·71
Egypt	340·34
Gold Coast Colony	10·92
Kenya Colony	14·91
Liberia	0·08
Madagascar	0·15
Mauritius	27·88
Morocco	0·09
Nigeria	19·67
Nyasaland	0·43
Rhodesia	27·23
St. Helena	0·08
Sierra Leone	4·76
Sudan	48·47
Swaziland	1·18
Tanganyika Territory	18·19
Uganda	1·56
Union of South Africa	707·89
	1,235·77

America.	
Argentine	865·37
Bolivia	1·06
Brazil	226·35
British Guiana	345·47
British West Indies	809·83
Canada	6,377·08
Chile	95·06
Dutch Guiana	14·42
Falkland Islands	0·16
Guatemala	112·0
Mexico	35·27
Nicaragua	0·16
Peru	30·86
Salvador	15·32
Uruguay	53·48
	8,981·89

Australasia.	
Fiji Islands	0·06
New South Wales	871·59
New Zealand	700·96
Queensland	58·43
South Australia	677·24
Tasmania	28·0
Victoria	348·12
Western Australia	192·71
	2,877·1
Grand total	77,364·48

1. These figures do not include heroin and salts of heroin.

2. These figures *include* exports by parcel post and the morphine and salts exported in the form of preparations coming within the provisions of the Dangerous Drugs Act.

The value of the exports cannot be stated exactly, but from information supplied by the manufacturers it is considered that the average prices ruling in 1920 and 1921 may be taken at about 17–18 shillings for morphine and 14–15 shillings for morphine salts in 1920, and 12–14 shillings for morphine and 10–12 shillings for morphine salts in 1921.

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